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The MANUFACTURING CONFECTIONER

Published by THE MANUFACTURING CONFECTIONER PUBLISHING CO., 30 N. La Salle St., Chicago, Ill.
Editorial Office, 39 Cortlandt St., New York City.



"Read wherever candy
is manufactured"



7/10



7
The old time honored finger test still has a place in candy making especially in cordial work, says Mr. Schildberger, see page 40.

Keynote for October:
Cream and Cordial Work



The PATHFINDER
in the
Gelatine Industry

A Certificate
of ANALYSIS
with every delivery

DELFT

The GELATINE that PROVES its QUALITY



Each Delivery Identical in Every Detail

No need for samples. Customers test from any barrel they have on hand. Delft's purity and standardized strength are always the same. BIOLOGICALLY CORRECT. Guaranteed free from harmful and liquefying bacteria.

Harold A. Sinclair

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Folsom Street

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"Price is a relative term—Quality always a concrete fact"

HAROLD A. SINCLAIR, 160 Broadway, NEW YORK

The MANUFACTURING CONFECTIONER

Vol. 7, No. 10

OCTOBER, 1927

\$3.00 Year

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Stop the Waste of Human Experience

IN every industry the cry goes up against waste—waste of manpower, waste of materials, waste of time and money. Yet the greatest of all wastes is the waste of human experience. The sum total of human experience determines the progress of the human race. Nowhere is that experience so readily available to us as in the written word which fills the pages of the technical press.

We stumble along, making the same mistakes which others have made—and in many instances, overcome. But do we take the pains to find out *how* they were overcome? The stories of how others have wrestled successfully with the same problems are all there if we will but take the time to read them. Instead, we go on *relearning* from the cradle to the grave.

When a man dies he takes with him all his varied experiences except that portion of it which he has committed to the written word. And this, if his life work in perspective should prove worthy of remembrance, remains his monument for long years afterward. Must a man die in order that his contributions to an industry may be appreciated? We think not.

The volume of our subscriber mail proves to us that there is no shortage of live ones, ready and anxious to take advantage of the experiences of others in unravelling their own immediate problems. They look to our paper to chronicle the experiences of the men of the industry who are up and doing.

Our keynote this month is cream work—cream work and cordials. Look over this table of contents and see if these subjects do not cover some problem which you now have in mind. And as you read through the articles and say to yourself, "That fellow hit the nail on the head," don't fool yourself by adding, "I'm going to do that myself when I get a chance," but get busy and do it!

ROBERT RANDOLPH,
Editor.

*"A Half Century
Making a Flavor
for Every Purpose"*

FRITZSCHE BROTHERS, Inc.

82 Beekman St. 118 W. Ohio St.
New York Chicago

TORONTO
Fritzsche Brothers of Canada, Ltd.
93 Church St.

Everybody Buys Candy at Holiday Time—

Yours as well as the other fellows—year around business tho, is the ideal of every confectioner.

* * *

Are you going to be content to be carried along with the tide this year, or will you transform every pound of goods sold, into a tasteful and compelling argument to win your customers' future business?

"KEEP CANDY HANDY"

is a fine slogan for the industry—if you want it to apply to **your** candy try this one—

"KEEP CANDY TASTY"

not so alliterative perhaps, but fully as significant.

* * *

"A good flavor properly chosen and correctly used is the most vital element in the success of any piece of confectionery."

* * *

We have been making good flavors for over fifty years—more than half a century devoted to intensive study of your needs. Why not let us help you?

* * *

Complete descriptive catalog sent on request—or better yet, detailed recommendation in response to a specific statement of your problem.

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Confectioners' Machinery and Supplies

and Miscellaneous Advertising Directed to Manufacturing Confectioners

POLICY: THE MANUFACTURING CONFECTIONER is essentially a manufacturers' publication and therefore is a logical advertising medium only for confectioners' supplies and equipment. The advertising pages of THE MANUFACTURING CONFECTIONER are open only for messages regarding reputable products or propositions of which the manufacturers of confectionery and chocolate are logical buyers.

This policy EXCLUDES advertising directed to the distributors of confectionery, the soda fountain and ice cream trade. The advertisements in THE MANUFACTURING CONFECTIONER are presented herewith with our recommendation. The machinery equipment and supplies advertised in this magazine, to the best of our knowledge, possess merit worthy of your careful consideration.

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Unco Simile Fruit Flavors

(IMITATION)

Natural fruit flavors are impractical and unsatisfactory for use in many confections since, whatever their delicacy of flavor, they lack strength and do not impart their character to the finished product unless fortified in some way. For the candy maker their place is admirably filled by

Unco Simile Fruit Flavors

These valuable materials are as close to nature in flavor as expert attention and long experience can make them and have the additional merit of high concentration.

To employ them is to insure economy in manufacturing costs and satisfaction in results.

UNGERER & CO.

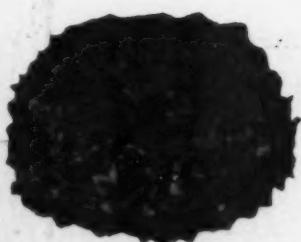
124 West 19th Street

NEW YORK

Meet the popular preference for the flavor of

GOLDEN TOASTED COCONUT

Its eating qualities are an ideal foundation for confectionery



**A specialty topping by the
makers of Gem Imported Coconut.*



EVERYBODY loves Baker's Golden Toasted Coconut. Many of the most popular candy specialists owe their success to the delicious uniform quality of this "economy nutmeat." The rich nutty flavor of Baker's Coconut blends in well with so many candy combinations that it is easy to take advantage of the sales appeal of quality coconut by incorporating "Golden Toasted" with some of your present staple but slow selling items.

Let us send you a generous working sample and try it out in your development work this fall. You will find that Baker's "Golden Toasted" has the quality of giving an added sales impetus to any confection in which it is well used.

The many new varieties of our
Golden Toasted Coconut*

"The Economy Nutmeat"

suggest enumerable candy specialties combining this delicious nutty flavor with a low cost basis to you.

Write for experimental samples

You will be more than pleased with the

**ATTRACTIVE — DELICIOUS — AND THE
COLOR — FLAVOR — PRICE**

FRANKLIN BAKER COMPANY

Hoboken, N. J.

CANADIAN ADDRESS: Franklin Baker, Ltd. OUTREMONT, MONTREAL

20 BATES ROAD

C.C.C.

VANILLIN
COUMARIN
BENZOATE OF SODA
BENZOYL CHLORIDE
BENZOIC ACID

The metal seal, with which Commonwealth tins are furnished, is quickly and easily removed, leaving a tight-fitting, replaceable cover.

Commonwealth Products never touch the tin in which they are packed. Every can has an inner container of tough, tear-resisting paper to prevent contamination.

Your Product can be no Better than its Ingredients

MANY an otherwise perfect diamond is spoiled by a flaw unseen by the naked eye. Many a product just misses the goal of quality because of the presence of just one inferior ingredient.

Those manufacturers who exercise the greatest care in selecting ingredients to the end that no inferior materials will be used, almost invariably depend upon flavoring materials that possess long-established reputations for uniformity and quality. Many such manufacturers are standardizing on "Commonwealth" in ordering

flavoring materials, because long experience has proved that Commonwealth Coumarin and Vanillin furnish uniform and dependable purity.

Whatever *your* requirements may be, your product and its reputation are best protected by using flavoring materials bearing the Commonwealth trade mark.

Wherever *your* plant may be located, there is a convenient warehouse stock from which prompt deliveries of Mathieson products may be obtained.

The MATHIESON ALKALI WORKS Inc.

Commonwealth Division

250 PARK AVE.

NEW YORK CITY

PHILADELPHIA CHICAGO PROVIDENCE CHARLOTTE CINCINNATI

STOCKS IN PRINCIPAL CITIES

ISOLATE VANILLA

*Another Member of the
Famous ISOLATE Family*

- (1) CHOICEST BEANS—Only selected Mexican and Bourbon Vanilla Beans are Used—Contains NO artificial flavor or color.
- (2) FLAVOR EXTRACTED WITHOUT USE OF HEAT—Utmost smoothness and strength is assured—No “burnt” taste.
- (3) LEAST DILUTION— $83\frac{1}{3}\%$ LESS BULK—This because strength is 6 times that of ordinary vanillas.
- (4) DOES NOT FREEZE OUT—COOK OUT—Special Non-volatile Vehicle Retains Flavor AT ALL WORKING TEMPERATURES.
- (5) UNIFORM STRENGTH—through laboratory control, assuring Uniform Results.
- (6) LOWER COST—**You Save at least 25%.**

In “ISOLATE VANILLA,” Science has again produced a more powerful, and yet more economical means of achieving ideal flavor results.

“ISOLATE VANILLA,” extracted from 6 times as many vanilla beans as are required to make standard pure extract, introduces only 1/6 as much liquid into your batch; eliminates the cost of 5 containers, 5 cartons, 5 labels, 5 corks; also saves on alcohol, labor, etc.; costs you $83\frac{1}{3}\%$ LESS FREIGHT or express; and Flavors Your Product Better because it is made by the Foote & Jenks exclusive “ISOLATE” principle, at subnormal temperature, which extracts only the most desirable natural flavoring elements, yet loses none of the delicate flavor which passes off when heat is used.

A trial gallon of ISOLATE VANILLA will prove conclusively that it gives both your fresh made and your stored product a better, richer, unchanging, perfectly uniform full vanilla flavor (retained through low or high temperatures) at less cost and with greater ease in handling than any other pure unfortified all-vanilla extract in existence.

Order Trial Gallons Sent Prepaid

FOOTE & JENKS
Flavor Specialists

JACKSON, MICHIGAN

For those who prefer it,
the same basic ISOLATE
Vanilla is supplied forti-
fied with Coumarin under
the name Vanillacum; or
fortified with Vanillin un-
der the name Iso Van;
each six times the strength
of ordinary vanillas.

At Last! A Real Butter Flavor

Butter Bouquet

Not a mixture of Butric Acid, Ethers or Esters, but a PURE Butter Flavor containing the flavoring constituents found by analysis in Butter.

One ounce is equal in flavoring strength to one pound of Creamery Butter. Guaranteed against rancidity.

Used in Hard Goods, Cream Centers, Fudges, Caramels.

Other Bouquets:

Cherry, Tame
Cherry, Wild
Cocoanut
Grape

Hazelnut
Honey
Peach
Pineapple
Walnut, English

Raspberry
Rum Punch
Strawberry
Walnut, Black

Let us ship you, postpaid, a trial pint of any or all flavors, on approval.

SETHNESS COMPANY

659 Hobbie Street
Chicago

1133 Broadway
New York



JAMES J. CAREY
Pioneer Cocoanut Oil Refiner

Announcement to Buyers of Refined Cocoanut Butters

James J. Carey, who for many years was in charge of production for the India Refining Co. of Philadelphia, has just completed a modern and efficient cocoanut butter plant at 63rd and Eastwick Ave., Philadelphia.

"Carey's" Butters are built up from the crude material under Mr. Carey's personal supervision. His twenty-five years' experience manufacturing butters for the candy trade enables him to offer cocoanut butters which will give complete satisfaction for any particular purpose.

Mr. Carey's personal counsel and advice are available at all times to candy manufacturers regarding cocoanut butters for various classes of production. Mr. Carey's practical understanding of candy manufactures in addition to his scientific understanding of production of cocoanut butters puts him in an excellent position to render service to candy manufacturers in increasing quality at lower producing costs.

An opportunity to quote on your requirements will be appreciated. You'll like both CAREY quality and price—you can depend upon CAREY service for the very best in cocoanut butters.

*Make memo to your
Purchasing Dep't to
try Carey's Butter on
your next shipment.*

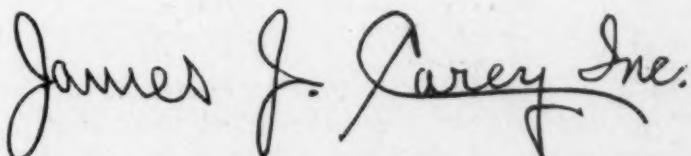
"Custom made" Cocoanut Butter

[A Special Cocoanut Butter developed to meet each Candy Manufacturer's particular requirements.]

Advise us your particular requirements and we will develop exactly the correct cocoanut butter for the particular pieces you are producing—for your particular quality of caramels, taffies, nougats, chewing pieces in general, etc., requiring the use of cocoanut butters.

Mr. Carey's personal attention will be given to the development of butters for each and every candy manufacturer's requirements—our aim is to give each candy manufacturer exactly the right butter for each purpose.

Carey prices are right—Carey service is right—Carey quality is far higher—complete satisfaction is assured. Try Carey Butters and service—see the difference in your finished candies—note the savings in your butter costs.



63rd St. and Eastwick Ave.,
PHILADELPHIA

TELEPHONES:
WOODLAND 4592
WEST 1175

Chocolate coatings, American made in the Swiss manner



For your *QUALITY CHOCOLATES* Peter's "Couvertures"

EVERY ONE of these "Couvertures" or coatings has first been rigidly tested to insure the high standard of excellence established many years ago in Switzerland for the House of Peter.

After comparative experiments manufacturers of the finest confectionery find they get better results from Peter's "Couvertures."

The long experience and skill of experts in

eight of the world's famous factories are combined to produce these premiere coatings.

Peter Cailler Kohler Swiss Chocolates Co.,
131 Hudson St., New York City. Branches: 431
So. Dearborn St., Chicago, Ill.; 722 Nicholas
Bldg., Toledo, Ohio; 3620 Third Ave. South,
Minneapolis, Minn.; 24 California St., San
Francisco, Cal.

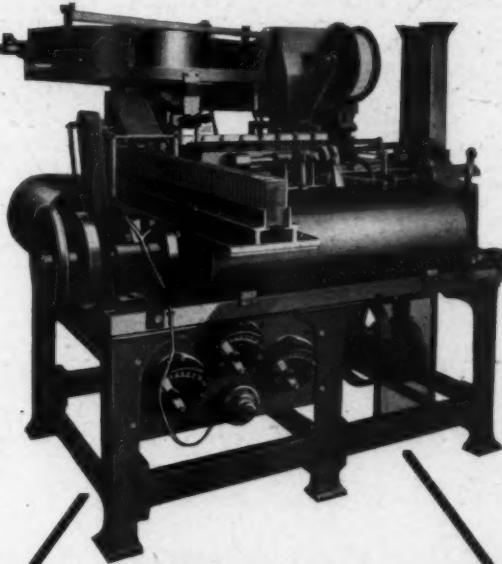
MILKS · VANILLAS · SWEETS · BITTER SWEETS · LIQUORS

The Trend Is To Bulk Candy in Bags or Cartons Assuring Quick Turn

CASH in on public preference for bulk candies in small price units packed in clean, sanitary shape, untouched by human hands since sealed by the manufacturer.

Many a candy sales scoop has been made by repacking an old item in the line—a good eating piece but a slow bulk seller—in a small package for counter sales where candy is exposed to thousands of live retail outlets which never carry open bulk goods

45 to 125
Cartons
per minute
with this Paper
Lining and
Filling Machine
---it does the
work, hour after
hour, day in,
day out, giving
dependable, con-
tinuous service



Automatic---
This machine feeds waxed or glassine paper from rolls, lines, cartons, fills with right amount, closes cartons and counts them

If it can
Be Wrapped--
Put In Bags or in
Cartons--and Counted

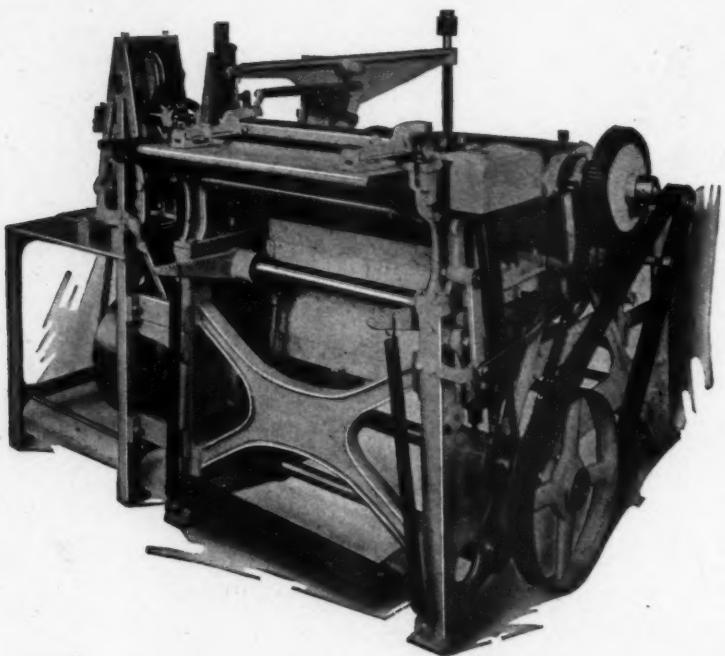
We have a machine that can do it

Send us sample of your product; we will quote price on equipment for cartoning your goods automatically

CARTONING MACHINERY CORPORATION

Newport, Rhode Island

The AUTOMATIC HARD CANDY MACHINE for SPHERICAL HARD GOODS



This machine embodies in it all the features of the Semi-Automatic Machine plus the added convenience of Sizing, Feeding, Cutting and Discharging,
entirely automatically

IT SAVES LABOR

**INCREASES PRODUCTION
DOUBLES YOUR PROFITS**

Full information on request—Do it now!

**JOHN WERNER & SONS, Inc.
ROCHESTER, N. Y.**

New York Office: Alamac Hotel.



MOGUL

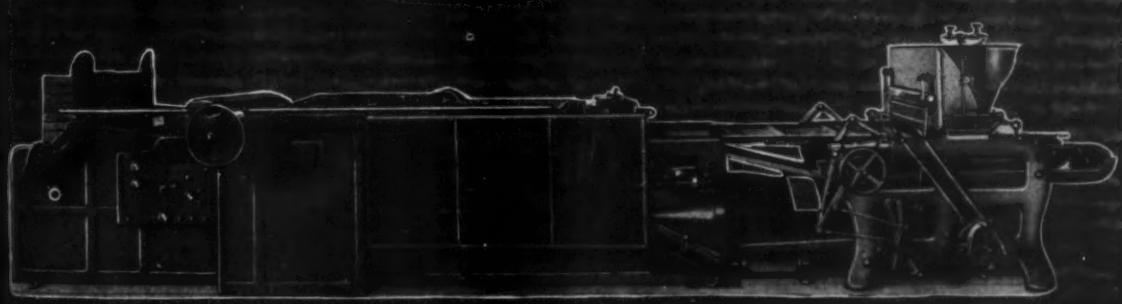
The Heart of
Your Factory

HERE is the machine that is the key-note of your production volume in center goods—does all the casting, printing, cleaning and depositing—automatically—with continuous operation—and does it at a great saving.

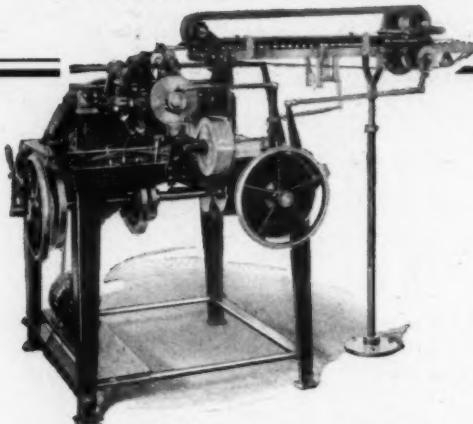
We will gladly furnish certified surveys of Mogul performance and costs in well-known factories. Write us today for this important data.

National Equipment Co.

Springfield, Massachusetts, U. S. A.



Life Saver Fruit Drops Beechnut Fruit Drops Payroll Lozenges Cummings Mints Lance Cough Drops Mars Chocolate Bits



are wrapped on this machine

The manufacturers of these highly successful products were quick to avail themselves of the merchandising advantages offered by the type of wrapping produced by this machine.

It keeps the product in good condition, lends itself to good counter display—within reach of the casual purchaser. And appeals to the consumer because, when opened, the package holds its shape and does not spill the candy into the pocket.

This machine is now equipped with an automatic feeding device which eliminates the ne-

cessity of stacking the tablets before they are wrapped. The candy is fed into a hopper at one end of the machine, and from then on the entire process is automatic. The machine stacks the tablets into the required number, wraps them in reinforced foil cut from a roll and bands the wrapping in a printed label sealed with paste. One machine produced 18,000 packages per day.

For more information about this, or any other machine for candy wrapping, get in touch with our nearest office.

PACKAGE MACHINERY CO., SPRINGFIELD, MASS.

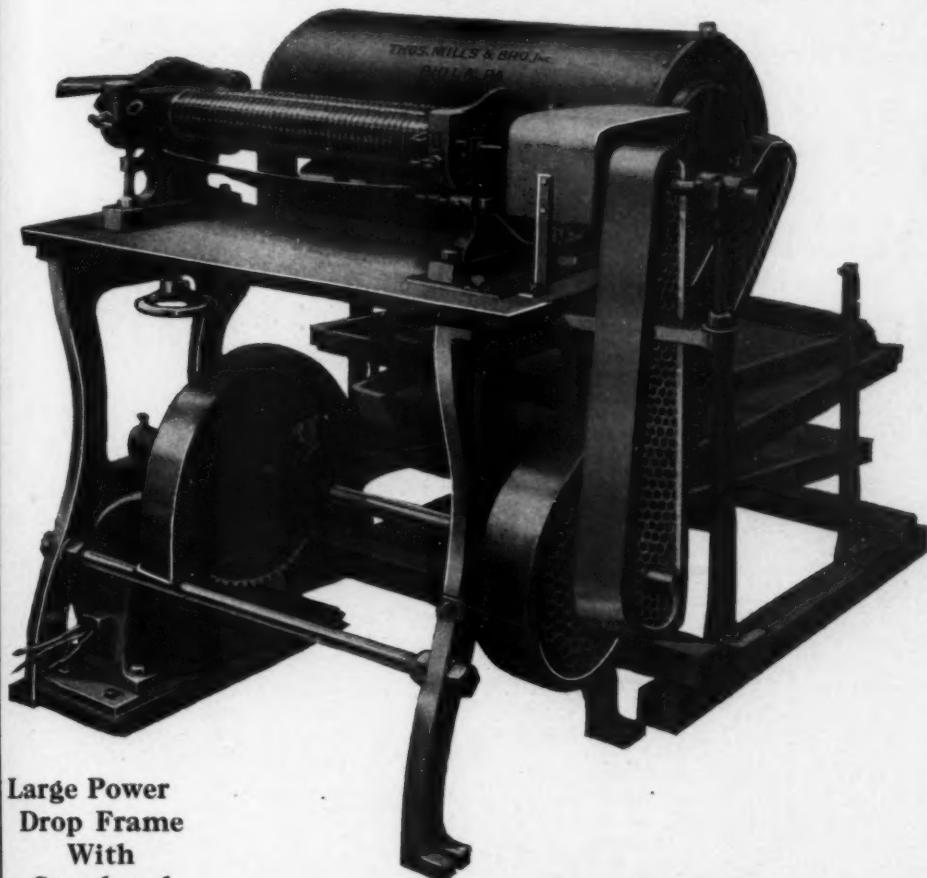
NEW YORK: 30 Church Street
CHICAGO: 111 W. Washington St.

Thomas Mills & Bro., Inc.

1301 to 1315 North Eighth St.

Philadelphia, Pa.

ESTABLISHED 1864



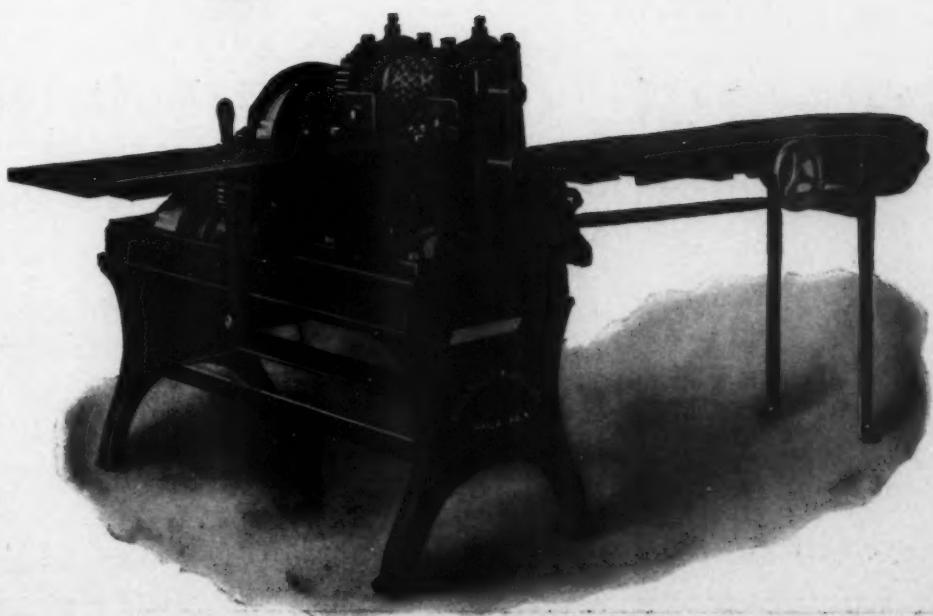
Large Power
Drop Frame
With
Stand and
Endless Belt
Conveyor
Attachments

Used In All
The Largest
Factories
For
High Grade
Hard Candies

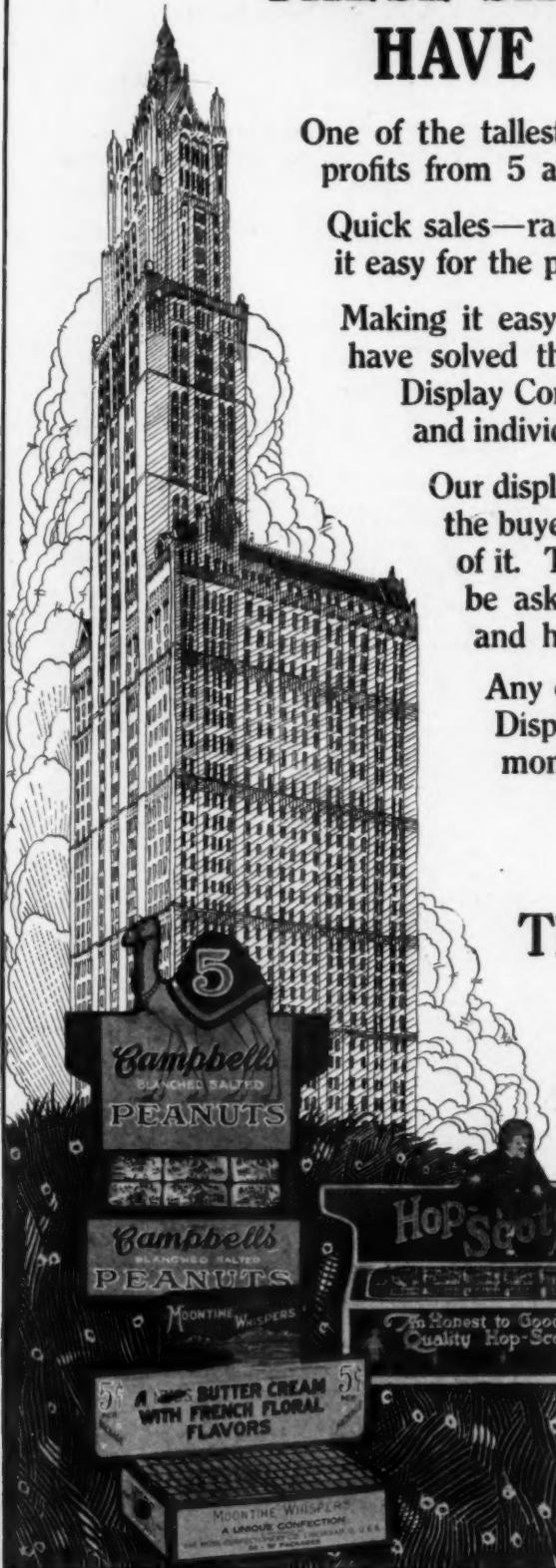
Our Catalog
of
Confectioners
Equipment
Sent on
Request

Patent
Automatic
Seamless
Hard Candy
Machine

Improve Your
Production
By
Installing
This
Labor Saving
Machine
Send for Special
Circular



THESE SILENT SALESMEN HAVE BEEN PROFITABLE



One of the tallest buildings in the world was built on profits from 5 and 10 cent sales.

Quick sales—rapid turnover—accomplished by making it easy for the public to buy.

Making it easy to buy—that is the answer—and we have solved the problem with our Silent Salesmen Display Containers. We design them distinctively and individually for each product.

Our displays will place your goods directly before the buyer—NOT IN the show case but ON TOP of it. The price is marked—no questions need be asked. The buyer puts down the money and helps himself.

Any of our salesmen will tell you how U. S. Displays have speeded up sales and made money for our Customers.

WRITE US FOR PARTICULARS

The United States Printing
& Lithograph Co.

Color Printing Headquarters

65 BEECH ST.

CINCINNATI, OHIO

Increasing Candy Sales!

THE Candy Industry is engaged in a three year Cooperative Advertising and Educational Campaign to increase the consumption of candy. \$875,000.00 has been pledged for a period of three years. The first year's installment has been paid. Manufacturing Retailers, Retail Candy Stores and Candy Departments will be among the first to benefit from this Advertising and Educational work. Will you help?

The Plan Approved

The Cooperative Advertising and Educational Plan was submitted to all classes of the industry in all sections of the country before its adoption. After this as a final method of approval it was submitted to the advertising managers of the leading manufacturers in the candy industry.

Everything possible was done to be sure that we were right, before we went ahead. The Fisher-Wilson Advertising Agency in charge of the advertising is under the direction of the Advertising Committee consisting of George H. Williamson, A. M. Kelly, W. C. Dickmeyer, Vincent L. Price and L. W. Wheelock. The Committee works under the direction of the Executive Committee of the National Confectioners' Association.

Outstanding action of the eleventh annual convention of the Associated Retail Confectioners of the United States held in Philadelphia last May, was the unanimous approval of the Advertising Campaign. The A. R. C. composed as it is for the most part of operators of large candy stores in the larger cities, sees the need of such a campaign of Advertising and Education.

Financing the Work

Manufacturers, Manufacturing Retailers, Jobbers, Distributors and the Supply Houses are cooperating in financing the \$1,050,000.00 fund for three years' work. Individual Manufacturers have contributed as high as \$50,000.00. Others have pledged what they could afford.

The candy industry has raised more money and in less time and cost than any other industry, the cost running less than 2%.

Will You Help?

Confectioners and Retailers of candy will automatically benefit from the Advertising and Educational work that is being done by the N. C. A. A large number of candy Retailers have already evidenced a desire to help in this work by making a small contribution as their share of the program.

Will you help by making a pledge for whatever amount you wish to contribute annually for three years, or if you prefer send in your check as a contribution for the first year? Use the attached coupon for convenience in pledging or making contribution.

Five Main Objectives

The five main objectives that this campaign has in view are as follows:

- 1—To correct unjust prejudices against candy and to educate the American public to the real food value of candy. This is a part of our educational work.
- 2—To increase the demand for candy on the special holidays and eventually developing enough holidays to affect a full year's business.
- 3—To develop new buying customs, like "Take Home Candy for Sunday."
- 4—To establish new customs in the use of candy.
- 5—To educate and assist the jobber and retailer in better merchandising methods.

Mediums Being Used

The Saturday Evening Post, Liberty, Cosmopolitan and American magazines are among the mediums being used for the consumer copy. The total circulation of these magazines is over seven million copies of combined circulation per month.

Dealers' Helps Available

Proofs of the Advertisements in two colors, Contributors' Emblem, Window Posters and other Advertising material are available to contributors and retailers of candy.



Financial Campaign Director
1110 Conway Bldg., Chicago

One Year

I desire to pledge \$..... for Three Years to the Advertising and Educational Campaign of the candy industry, or

Enclosed find check for contribution of \$.....

Firm

Name State

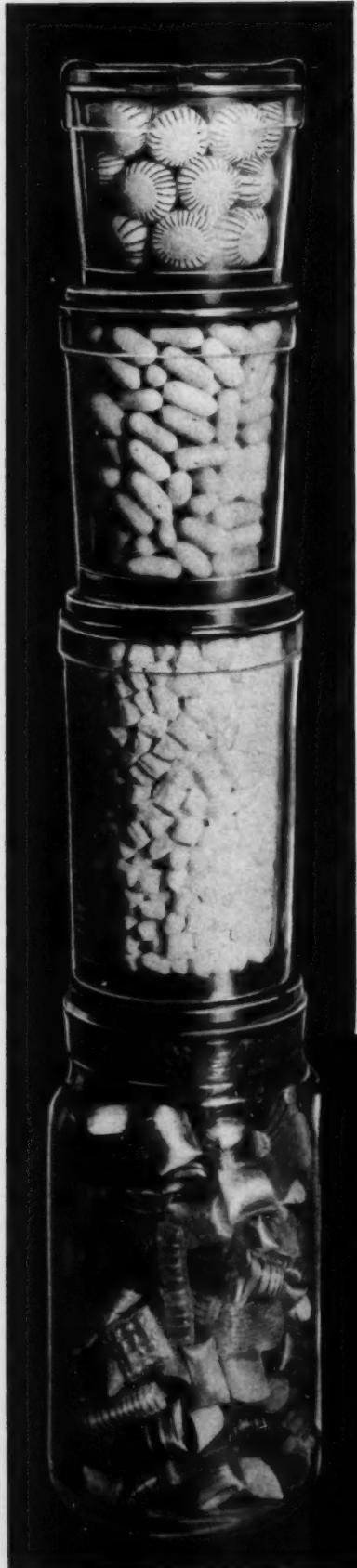
City State

ADVERTISING AND EDUCATIONAL FINANCIAL CAMPAIGN

National Confectioners' Association

1110 Conway Building

Chicago, Illinois



Four Good Reasons Why You Should "Vacuum Seal" Your Products, Using Vacuum Seal All Glass Jars and Caps

First: The patented wedge-shaped groove and the extra high-grade rubber give 100% perfect seal, which is retained.

Second: Easy to open. Note patented notch in cover.

Third: Flat top allows stacking on Mr. Dealer's shelf, but gets preferred space on counters and in windows.

Fourth: If you will give consumers an opportunity to decide which package of hard candy to buy, they will pick "Vacuum Seal" All-Glass Jars on account of their re-usable values, as they are ideal for home canning.

Vacuum Seal Jars and Caps can be processed in any retort equipped to handle glass.

FRUITS, VEGETABLES, or MEAT PRODUCTS can be successfully packed in Vacuum Seal All-Glass Jars and Caps.

Jars are made in various sizes and styles.

Write for full information

VACUUM SEAL COMPANY, Inc.

154 NASSAU STREET

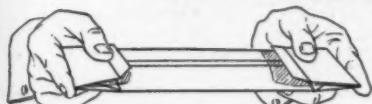
NEW YORK

NOTE—The cover rubber and clamp on the four jars at the left are interchangeable and should appeal to the housewife as well as to the packer.

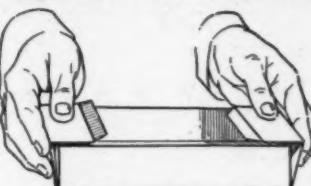


Here's the New
SIMPLEX
Two-Piece, Knocked-Down
CANDY BOX

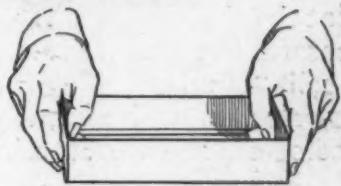
That Is Establishing Such An Enormous Sales Record



Hold lightly at the ends



Press straight together



Push down flaps with thumbs



THE SIMPLEX BOX SET UP

Note how end flaps lock into position, making same appearance and same rigid construction as regular machine-made set-up box.

Simplex opens a new and highly profitable field to candy jobbers. Every retail confectioner is a potential Simplex buyer and a source of steady, all-year-round business.

Think of these facts

Simplex boxes cost much less and they require 90 per cent less storage space.

They are easily and quickly adjusted for use. Double sidewalls insure strength and rigidity. The cover only, or both box and cover, may be in printed, lithographed or embossed design. Furnished with two laces, if desired.

Either closed or open for display, Simplex cannot be distinguished from present-day set-up boxes.

A variety of attractive designs, suitable for year-round use, also special Christmas designs, in one-half, one or two-pound sizes are ready for prompt shipment. They are conveniently packed, for distribution to retailers, in lots of 100 or in corrugated cases of 1,000.

To show Simplex is to make a sale
Get your share of big sales
Samples and particulars on request

LITITZ PAPER BOX & PRINTING CO.
Division of the
McGRAW BOX COMPANY

200 FIFTH AVENUE

WHEN IN NEW YORK VISIT OUR PERMANENT SHOWROOM

NEW YORK

A Frank Statement to the Candy Trade

THE success of retail chain stores is generally conceded a serious menace to high-grade wholesale manufacturers of chocolates.

Allowing that both use good quality materials, the outstanding point of difference is that the chain stores, as well as the more successful independent retail manufacturers sell "hand-rolls," while the bulk of high-priced chocolates put out by the larger factories are still "starch-cast."

This point alone gives them a tremendous "eating quality" advantage that must be met with equal quality if the wholesale manufacturers are to improve or even hold their present position. The superior quality of "hand-rolls" is getting better known every day, and with the large production possible on the FRIEND "DREADNAUGHT," at a cost of little, if any, over "starch-cast" goods of admitted inferior quality, the advantage of better quality creams put out by the small manufacturers can easily be met.

From a sanitary standpoint, the "DREADNAUGHT" process is of greatest value. It does entirely away with the use of starch, which is the dirtiest material used in a candy factory, and there is practically no delay in the process from kettle to the finished goods.

"Hand-roll" competition can not be successfully met with inferior "starch-cast" creams.

Very truly yours,

Harry L. Friend

What a User Says:

Sept. 30, 1927.

Mr. Harry L. Friend,
152 Milk Street,
Boston, Mass.

Dear Sir:-

We feel that we owe you this letter and more, too, for putting us next to your FRIEND, Cream Center Maker. We are using the one purchased from you with the most wonderful success imaginable and cannot recommend it too highly to our many friends in the confectionery business.

For your information wish to state that we experience no difficulty at any time in producing centers that are JUST WHAT WE WANT AND WHICH CANNOT BE PRODUCED BY HAND.

Your machine takes the place of five girls used heretofore in rolling centers to keep our dipper girls and the whole operation and distribution to the dippers now only requires the use of one girl, so you can readily see that the machine has paid for itself many times and given us better centers and the elimination of fermentation which we used to have now and then.

It would be our pleasure to demonstrate the use of the FRIEND Cream Center Maker to anyone interested in same in this locality at any time and we know that after they have seen the real working of the FRIEND, they will be convinced that they have been losing time and money in making centers any other way.

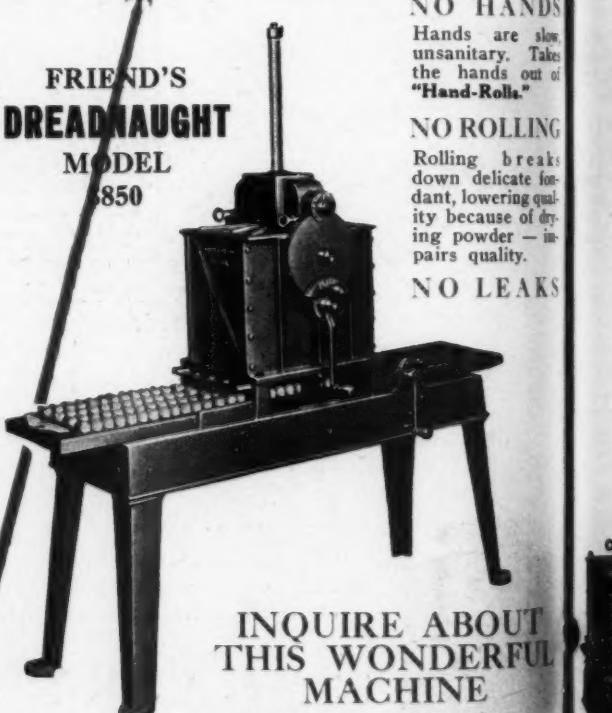
Yours very truly,

CECIL CHOCOLATE CO., INC.
Detroit, Mich.

(Signed) H. E. Cecil,
V.-Pres.

FRIEND'S
DREADNAUGHT

MODEL
850



NO HANDS

Hands are slow
unsanitary. Take
the hands out of
"Hand-Rolls."

NO ROLLING

Rolling breaks
down delicate for-
dant, lowering qual-
ity because of dry-
ing powder — im-
pairs quality.

NO LEAKS

INQUIRE ABOUT
THIS WONDERFUL
MACHINE

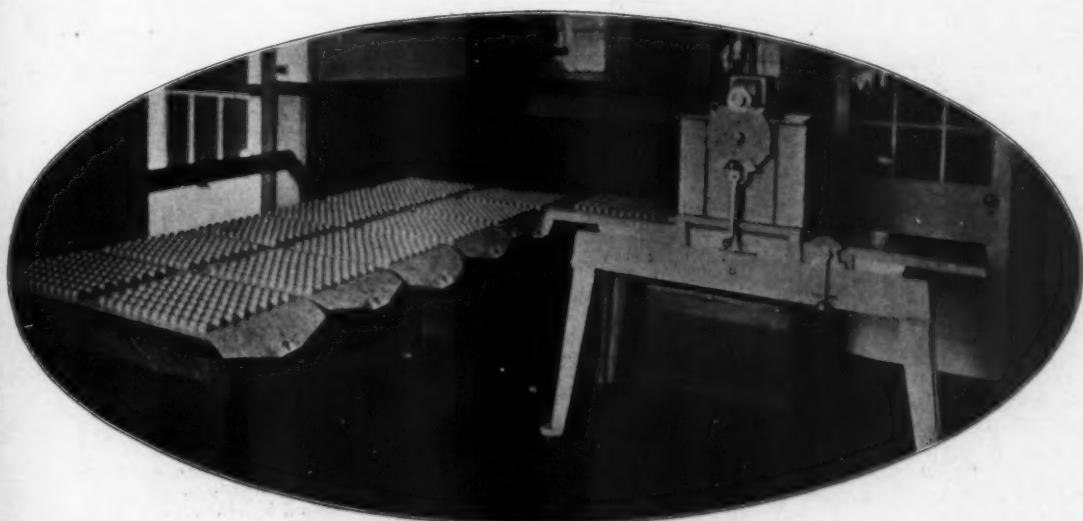
You can't go wrong in this machine. It
will solve your problems of making
"Hand-Rolls." Send for full particulars
TODAY. You will never regret it.

A FRIEND PLASTIC CENTER

HAND FRIEND ROLL PLASTIC CENTER MACHINES

Make the Best Hand-Rolls

WOULDN'T it be worth your investigating a machine that will make highest quality cream centers **five times** as fast as by any other mechanical method? Wouldn't a machine that will make cream centers **twenty-five times** as fast as by hand rolling be a most desirable piece of equipment in your plant? Can you afford to be without a machine that cannot be approached by any other means for producing perfectly formed centers, variety of materials, shapes, sizes, etc.?



THE NEW DREADNAUGHT MODEL
and what it produced in one minute's time.

No other means **at any cost** can do the same work as a FRIEND PLASTIC CENTER Machine—no other method, mechanical or hand, can produce the volume and quality at such low initial and operating cost. Candy manufacturers who are using FRIEND Plastic Center Machines are elated with the results—INVESTIGATE this new, fast, better way of making the best "Hand-Roll."

HARRY L. FRIEND
152 MILK STREET
BOSTON, MASSACHUSETTS, U. S. A.



Model E—70 lbs.
Capacity, \$385



Model F—30 lbs.
Capacity, \$350

MACHINE SAVES ITS COST TEN TIMES OVER IN ONE YEAR!

First Producers of Certified Colors

{ ATLAS CERTIFIED COLORS — scientifically prepared to meet the needs of the highest type of confectioners and for every purpose in the confectionery industry — particularly for plastic and clear hard candy work. }

Uniformity

Strength

Purity

Solubility



Food Color Headquarters for Fifty Years

FIFTY YEARS AGO WE PRODUCED THE FIRST HARMLESS FOOD COLORS used in the United States (after long study by experts of their physiological effects—the first and only work of this kind ever undertaken on coal-tar colors), and after establishing their harmlessness for food, every batch was tested before being distributed. This was 30 years before certified colors came into use, of which we were the FIRST PRODUCERS. We have never yet failed to prove any official wrong who claimed to find objectionable colors in our customer's goods. No manufacturer ever suffered through the use of them. We were largely instrumental in halting opposition of important officials when the present Food and Drug Act was before Congress, who would have forbidden all food coloring if they could.

CONFIDENCE

The Progressive Manufacturer can only establish a quality product by using the best material; there are no ingredients in which confidence in the producer is so absolutely necessary or important as in Colors and Flavors. Our 75 years of business experience is a guarantee of quality products, and a sound basis for your confidence.

GENUINE FRUIT EXTRACTS

Our Genuine Fruit Extracts are not only so-called, but the product of the actual fruit whose name they bear.

The production processes are by special apparatus and methods which retain and preserve all the finest and most delicate esters and aromas of the finest selected fully ripe fruit picked where the most lucious of its kind is grown.

We shall be glad to have an order for pint samples and suggest our wonderful Genuine Fruit Strawberry and Raspberry Extracts.

COLORS FOR PLASTIC WORK

Atlas Cert. New Rose

- " " Marseline Orange
- " " C. D. M. Green
- " " Mauvine
- " " 514 Brown

and many others, which will produce those beautiful and delicate shades of nature.

H. KOHNSTAMM & CO., Inc.

Established 1851

11-13 East Illinois Street
CHICAGO

Factory:
537-555 Columbia St., Brooklyn, N. Y.

83-93 Park Place
NEW YORK, N. Y.



Editorial

ROBERT RANDOLPH, Editor

The Battle of the Giants

OVER and over again we have heard it said that we are living in an age of consolidation. Did we think in our own quiet way that this change could come about without vitally affecting every man of us in the candy industry?—did we visualize consolidation as an abstract process going on in distant fields and in no way applicable to candy? If so, recent developments have been a rude awakening.

Left to themselves, our drunken excesses in competition, substitution and overproduction have been working their own harsh cures.

It is a cruel axiom that the strong shall wax stronger and the weak shall die—as witness the many powerful consolidations which have already been consummated.

Park & Tilford—Huylar, Happiness-Mirror, their years of reputation submerged in a common cause; Brewster-Ideal, and finally, the Postum consolidation, Postum Cereal-Walter Baker-Franklin Baker and Hellman—these are but distant rumblings of the great mergers to come.

Smaller manufacturers complain bitterly that the struggle between Rockwood and Hershey for supremacy in the coating field is slowly crowding them out of the picture.

Verily, the battle of the giants is at hand!

The Old Wailing-Place

AN EARTHQUAKE is reported to have destroyed the ancient wailing place in old Jerusalem.

We, too, have our wailing places—dressed in the modern guise of luncheon clubs and business men's associations. When confronted with the usual gamut of seasonal setbacks or with some elementary problem of economics too difficult for our lazy "think tanks" to wiggle out of, we get together and have a h—of a good time wailing about it.

But the armies were erecting a fortress or sacking a city while the wires of Jerusa-

lem wailed. Perhaps others with vision and a willingness to adapt themselves to the rugged need of the moment are improving each shining hour garnering the orders, while we hold our luncheons, our conferences, and wail.

Pessimism is the most contagious disease of the business world, so if we have nothing cheerful or constructive to offer, let our voices be silent at the old wailing places.

Waste!

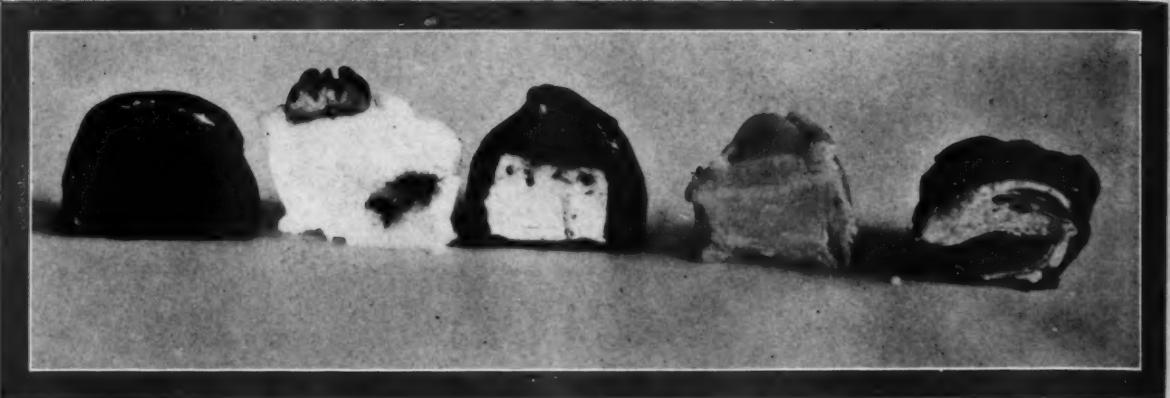
FOR the year that China has been first page news in the public prints, we have had many a laugh at their crude wooden implements and primitive methods of manufacture. Yet the Chinese economic system is one from which our western industrial civilization has much to learn. Their meager resources are utilized to the full.

Our own industry, profligate in prosperity, must learn in its period of retrenchment and readjustment to check the enormous flood of waste which is carrying away that part of our dollar which makes the difference between profit and loss. We can no longer shoulder the huge losses in time, in material, in mountains of scrap uneconomically utilized, nor that which is the greatest crime of all—the waste of human labor in handling and in manufacturing candy.

At the very moment when we become conservative in our policies, reluctant in our expenditures, it is most vital that we utilize the most efficient methods and machinery available, installing and co-ordinating it so as to cut out every lost motion.

Just as the advertiser is prone to cut down his advertising at the very time when he needs it most to bolster diminishing sales, so does the manufacturer cling to uneconomic and archaic systems and machines which, though he got by in spite of them in the boom period, will never allow a margin for profit when competition begins fighting for the nickels and dimes.

Strip if you must for action, but remember that the faithful old bus which carried you about in 1914 would keep you broke if you drove it now.



Fine clothes—do they smuggle bootleg batches past your shipping platform?

Fault-Finding for Profit

Checking the Quality of Finished Candy Pays
Big Dividends in Customer Satisfaction

A NEIGHBOR of mine threw a bridge party the other night, and making, as I do, a most excellent dummy, my wife and I were invited in for the evening.

Our hostess was more hospitable than mindful of etiquette, for when it came time to pass the candy she put before us a large open bowl into which two different packages of chocolates had been unceremoniously "dumped."

When the evening was over, I gravitated over toward the bowl and was not surprised to observe that all of the chocolates which remained were the product of one manufacturer—evidently from the same box.

The coating was dull and unat-

tractive looking. The centers, and I had already eaten several of them out of curiosity, were flat and tasteless. Yet the bottoms bore the imprint of a recognized quality house. It was quite an object lesson, for it was apparent to me, as a candy man, that it was just another case of where "someone had slipped."

The Need of a Post-Kettle Check-Up

I know a number of manufacturers who bend over backwards in checking up on the quality of their raw materials, but trust more or less to luck that their finished candies will be just what they try to make them. But the

customer is seldom concerned over the manufacturer's intentions. Every slip is part of a world-wide conspiracy against him. And it is nothing short of surprising how many of these "slips" come from some of the best managed and most carefully supervised plants.

The cumulative loss of prestige and good will arising from these accidents make it imperative that we institute some system of physical examination which will catch defective batches of candy before they leave the factory.

We, ourselves, have devised just such a system and find it satisfactory in every way.

The first problem which confronted us was that of personnel. Our inspector, if he was to be able

UNPACKED GOODS EXAMINED

Date _____

PIECE	COATING THICKNESS AND GLOSS	STROKE	COLOR	FLAVOR	CONSISTENCY OF CENTER	REMARKS

THE MANUFACTURING CONFECTIONER

to detect faulty batches of candy, naturally had to be an experienced candymaker himself. He must not only be familiar with our product, but as vigilant as the proverbial cat. Uneventful spells of several weeks at a time, when the factory machinery is hitting on all six and every batch comes through in perfect order, must not lull him into carelessness or indifference, for it is usually at such times that the worst blunders are committed.

The Superannuated Candymaker Is a First-Class Fault-Detective

Although it is not always a simple matter to find a man suitably qualified to take over this work, most plants that have been in business any length of time usually have on their payrolls one or more old employees whose usefulness in active work about the factory is limited by some physical disability. Often a man of this type makes an ideal inspector, and placing him in this position solves the vexing problem of what to do with him.

The inspection service falls naturally into two divisions—examining unpacked candies for flavor, gloss, consistency, etc., and checking up finished packages to detect errors in weighing, packing or labeling.

It is obviously desirable to check up on the quality of the candy before it is packed in order to avoid the unnecessary expense of repacking when errors are found. But should this be done on undipped centers or on the dipped goods? If we inspect the

centers before dipping, we may detect these errors in time to save the expense of dipping, but on the other hand, the inspection of the finished dipped goods provides a further check on gloss, proper stroke, etc., which is also desirable. The proper time for this inspection is best determined by the nature of the individual problems involved.

A Rule with No Exceptions

If the inspector has no other duties, he can take his samples himself; otherwise, it is advisable to appoint a responsible sample girl whose duty it is to set aside two pieces of candy from each batch as it is made and send them to the inspector for examination. To make the batch system foolproof, samples must be taken even when it seems perfectly obvious that the candy is O. K.

The inspector sets aside one of the two pieces for later reference, placing it in a box marked to correspond with the date of the examination. These duplicates may be stored as long as necessary to provide a check on the examiner's judgment. As a matter of fact, a regular post-storage examination of these samples can be made to furnish a valuable index to the keeping qualities of your candies.

The other sample is cut by the inspector on the day it is received. On a suitable form provided for this purpose, he records his observations concerning the gloss of the coating; the flavor, color and consistency of the center, and any other pertinent characteristics of the particular piece.

This report goes to the superintendent daily, thus enabling him to keep his finger on the factory's pulse at all times.

A Signal Effect on Quality

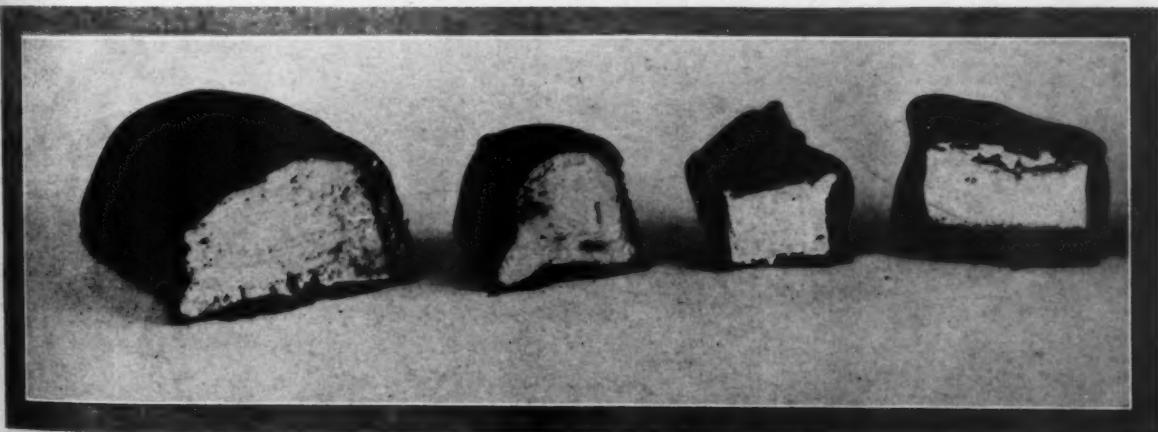
The installation of an inspection system usually has a profound effect upon the quality and uniformity of the finished product. Errors are discovered in time to be remedied or in time to avoid later losses of a more significant kind. The chances of defective candy getting into the hands of the customer are very small indeed.

The candymaker at the kettle who knows that he is constantly being checked by a competent fellow workman, redoubles his care rather than have his lapses come back to him with the superintendent's none-too-ladylike comments. It is my own belief that this moral effect alone is worth the price of the inspection.

A similar system is employed to detect mistakes in assortment, packing and labeling of packed goods. One package of each assortment packed is taken out of the lot as it enters the stock room. The inspector opens the package, checks the weight and records his observations as to cleanliness of box and wrapper, gloss of coating, wrinkled liners, broken pieces, correctness of assortment, etc. The candy so inspected is not lost, but is repacked and returned to stock.

Factories which have but recently installed an examining

Continued on page 52)



Your candies are judged by what they are, not by what you want them to be. How are they when they "check out"?

The Old, Old Story

Low syrup density and lack of scientific control over the rate of inversion spell worry and ruin to the candy maker

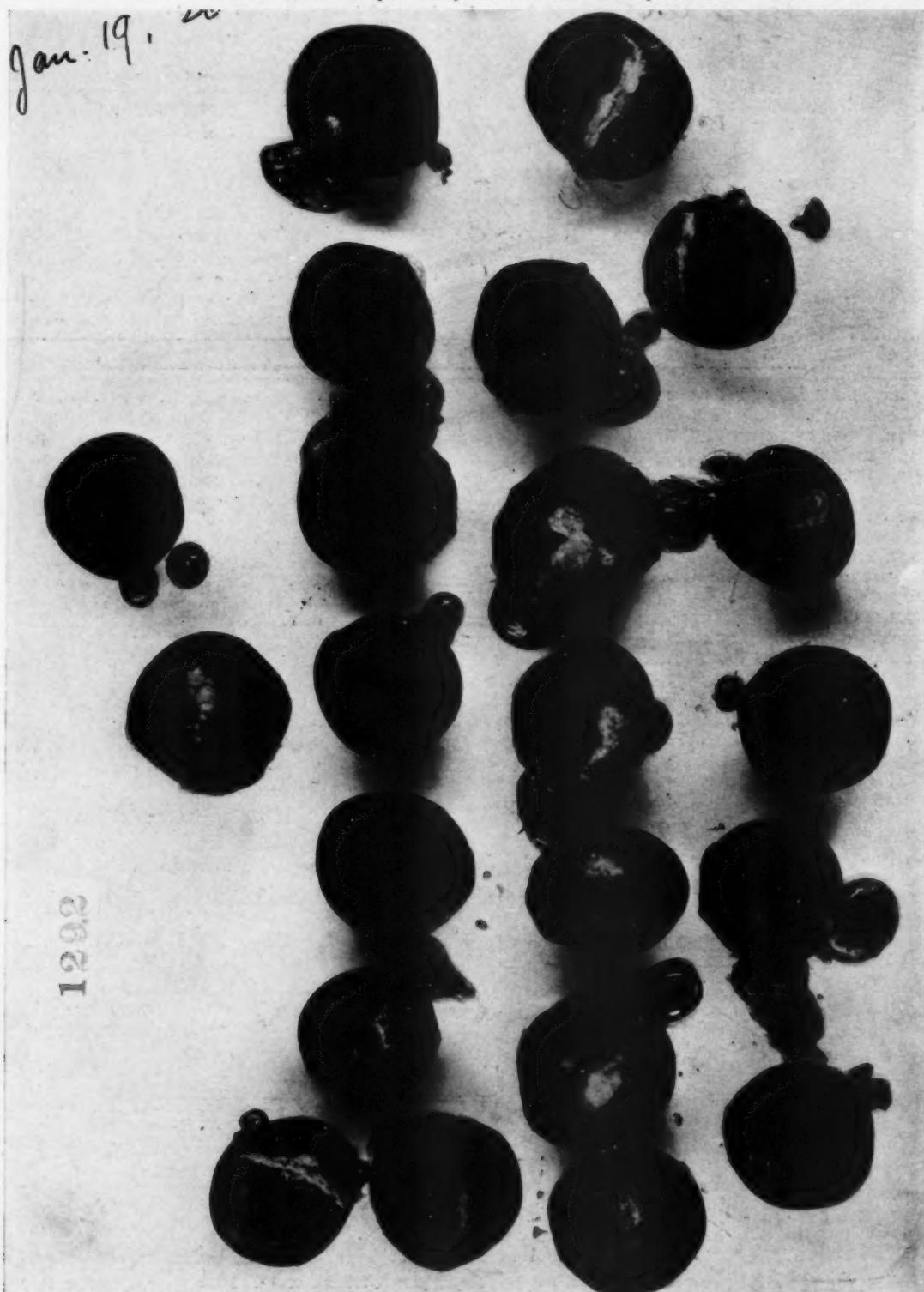


Figure 5—Batch 129.2 at End of Observation Period. All 21 Pieces Were Burst.

Can We Prevent Bursting Fermentation in Chocolate Cream Goods?

"Yes!" say our government chemists who present the confectionery industry for the first time, the complete data, methods and procedure covering more than a year of fruitful research work

BY H. S. PAYNE, VICTOR BIRCKNER and JOHN HAMILTON
Bureau of Chemistry, U. S. Department of Agriculture

*Editor's Note: Hitherto, only the conclusions of this research work have been published in the confectionery press. This complete report was originally written up for presentation before the American Chemical Society and published for the first time in their March, 1927, issue of *Industrial and Engineering Chemistry*. With their special permission, we have edited and modified this material, omitting highly technical phases of the subject and publishing it herewith for the benefit of confectionery manufacturers who are vitally interested in knowing just how the conclusions heretofore summarized, were reached.

FERMENTATION of chocolate-coated fondant or cream candy with bursting of the coating causes a large annual loss to the confectionery industry, both retail and wholesale. Investigation of this problem for the purpose of identifying the responsible microorganisms and devising a remedy was undertaken cooperatively by the Carbohydrate and Microbiological Laboratories of the Bureau of Chemistry, as the result of a request from the Research Committee of the National Confectioners' Association.

The microorganisms causing this fermentation were found to be yeasts of various types.¹ Their outstanding characteristic, from the standpoint of their presence and behavior in cream candies, is their ability to function in sugar solutions of relatively high density. They can grow in syrups of density high enough to suppress the activity of most of the other microorganisms present. Consequently, actively fermenting fondant candies represent practically pure cultures of the yeasts which cause fermentation. Practical means for controlling this type of fermentation under commercial conditions will be considered in this paper.

Fermentation of fondants by controlled inoculation with yeast cultures obtained from samples of fermented commercial candy, with analysis

¹Church, Payne and Hamilton, page 22, May, 1927, issue The Manufacturing Confectioner.

Bursting of chocolate-coated fondant candy due to fermentation is quite distinct from the slight cracking of the coating and exuding of syrup, which is known as "leaking" and usually occurs within 36 hours after coating with chocolate. Fermentation under commercial conditions rarely causes bursting in less than two weeks. A method for preventing "leaking" has been described by Reynolds and Hamilton, Manufacturing Confectioner, Vol. 4, No. 10 (1924).

before and after fermentation, showed that the quantity of sugar consumed was exceedingly small. The production of gas is the most significant and sensitive criterion of this fermentation, and the bursting of the chocolate coating is, in turn, a most sensitive criterion of gas production. Only a very small quantity of gas is required to cause bursting. As soon as this occurs, syrup exudes and in some cases the cream itself protrudes through the opening. The syrup and cream thus exposed to the air quickly dry out and as a result the fermentation soon ceases. Production of gas is sometimes so rapid as to cause extensive breaking of the chocolate coating and protrusion of most of the fondant center. For this reason the term "explosive fermentation" is sometimes used in the industry to describe this behavior.²

Under special conditions, however, it is possible to prolong active fermentation for a considerable period. One of two small identical fondant pieces was inoculated with yeast and the other served as a control. Both pieces were coated with paraffin. Fermentation proceeded rapidly in the inoculated piece, which finally swelled to several times its original size. Both pieces were coated with a practically identical thickness of paraffin at intervals, thus preventing bursting and escape of the gas produced. Drying of the cream center was thereby prevented, thus making it possible for fermentation to continue actively for several weeks. Thus it is evident that in order to prevent loss this type of fermentation must be checked from the very start. Even if only a small amount of gas is produced the chocolate coating will be badly cracked and the candy irreparably damaged.

General Characteristics of Fondant and Possible Means of Controlling Fermentation

Fondant or cream consists of a solid portion of microscopic sucrose (cane or beet sugar) crystals and a liquid portion of syrup which is saturated with respect to sucrose and which also contains in solution dextrose, levulose, dextrins and the non-carbohydrate constituents of corn syrup. The density of the syrup portion is subject to variation within rather wide limits. It appeared possible, therefore, to produce a syrup in fondant of sufficiently high density to inhibit the growth even of yeasts which are tolerant of relatively high sugar concentrations.

CAN WE PREVENT BURSTING FERMENTATION

Aside from supersaturation effects, the density of the syrup in the cream depends upon the relative solubility of the ingredients of the batch, which is determined by their nature and proportion. For a given batch composition the proportion of syrup to sucrose crystals in cream depends primarily upon the boiling temperature to which the syrup used for preparing the fondant is concentrated—the higher the temperature the smaller the proportion of syrup. Even for the same batch composition the density of the syrup in cream made from syrup concentrated to higher boiling temperatures may, owing to supersaturation, be temporarily higher than that of cream made from syrup concentrated to lower boiling temperatures. An increase in the remelt temperature also temporarily causes an increase in syrup density in fondant of given batch composition.

Evidently there are two general means of solving an industrial problem of this type, involving loss by fermentation. These are (1) by reducing the attack of the responsible microorganisms to a negligible minimum, and (2) by increasing the resistance of the medium to fermentation. The first involves general precautions of sterilization and measures designed to prevent infection. In spite of regard for the obligations of cleanliness and care in selection of ingredients, difficulties are encountered. Absolute immunity from fermentation, even under the most favorable commercial conditions, cannot be guaranteed. For a number of reasons the use of a preservative is not desirable. Furthermore, the choice of preservatives that could be used legally in a product of this character is very limited. It was decided to attempt to solve the problem by the second alternative method, with the understanding, of course, that precautionary measures to prevent infection would also be used so far as possible.

Paine and Hamilton⁸ have proposed the use of the enzyme invertase in fondant confectionery for the purpose of causing controlled inversion of a part of the sucrose after the goods are made. The result of this action is to increase the total sugar solubility in the syrup, to increase the syrup density, and, as a result, to increase the proportion of syrup to microscopic sugar crystals, thereby making the cream softer. This process, which has attained extensive use throughout the United States and in other countries, makes it possible to produce chocolate-coated cream candy with centers of any desired consistency. It appeared possible by the use of invertase, and possibly some accompanying manipulation of the batch composition, to increase the density of the syrup to such a point as to make it resistant to fermentation even by highly sugar-tolerant yeasts. An attempt was made, therefore, to solve the problem along this line.

Range of Solids Concentration in the Syrup Portion of Fondants

It was desirable to determine the limits of variation of solids concentration in the syrup portion

for different batch compositions, in order to ascertain the initial solids content of the syrup in fondant prior to the action of invertase. On account of the minute size of the sucrose crystals in fondant and the strong capillary forces causing retention of syrup in thin films enveloping the crystals, separation of syrup from the crystals by centrifuging was unsatisfactory.

Construction of the Syrup Press

A press for accomplishing this separation was made, therefore, after a design by F. W. Reynolds, formerly of this laboratory (Figure 1). The chamber for holding the cream is constructed of 2-inch hexagonal brass with a $\frac{3}{4}$ -inch hole bored through it longitudinally. A closely fitting plunger of cold rolled steel, fitted with a leather cup washer at the lower end, is inserted into this chamber. Paper is used as a filtering medium. A thin rubber gasket above the paper makes a perfect seal, the paper being supported by a piece of rolled monel metal cloth. The gasket, paper and monel metal cloth are held in place against the bottom of the chamber by means of a brass head fitted with screws.

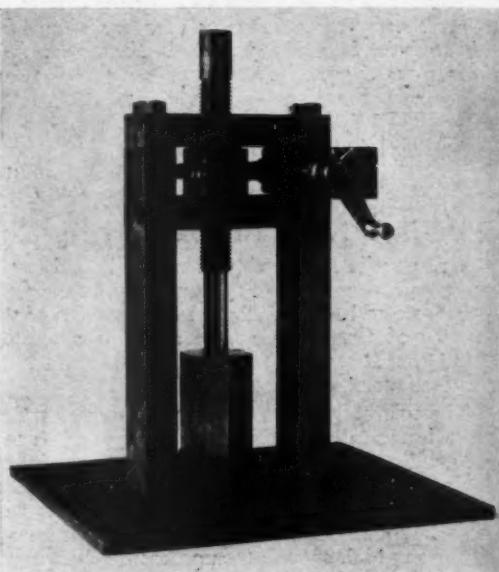


Figure 1—Press Designed to Separate Syrup from Microscopic Sugar Crystals in Cream

Pressure is applied to the plunger by means of a worm gear and screw. The syrup forced through the filter paper is received in a small glass container placed within a hollow iron block beneath the brass head of the hexagonal brass chamber. When egg albumin is added to fondant in the form of frappé, as is frequently done, the syrup is turbid, owing to the presence of small air bubbles. This air may be removed by centrifuging for a few minutes at about 2000 r.p.m.

It should not be inferred that fondant batches prepared from syrups of the original composition shown in Table I would invariably contain a syrup portion of the exact solids content indicated.

⁸U. S. Patents 1,437,816 (1922), and 1,502,207 (1924); Manufacturing Confectioner, Vol. 4, Nos. 5, 7 and 8 (1924).

Progress is indicated as the syrup density is increased

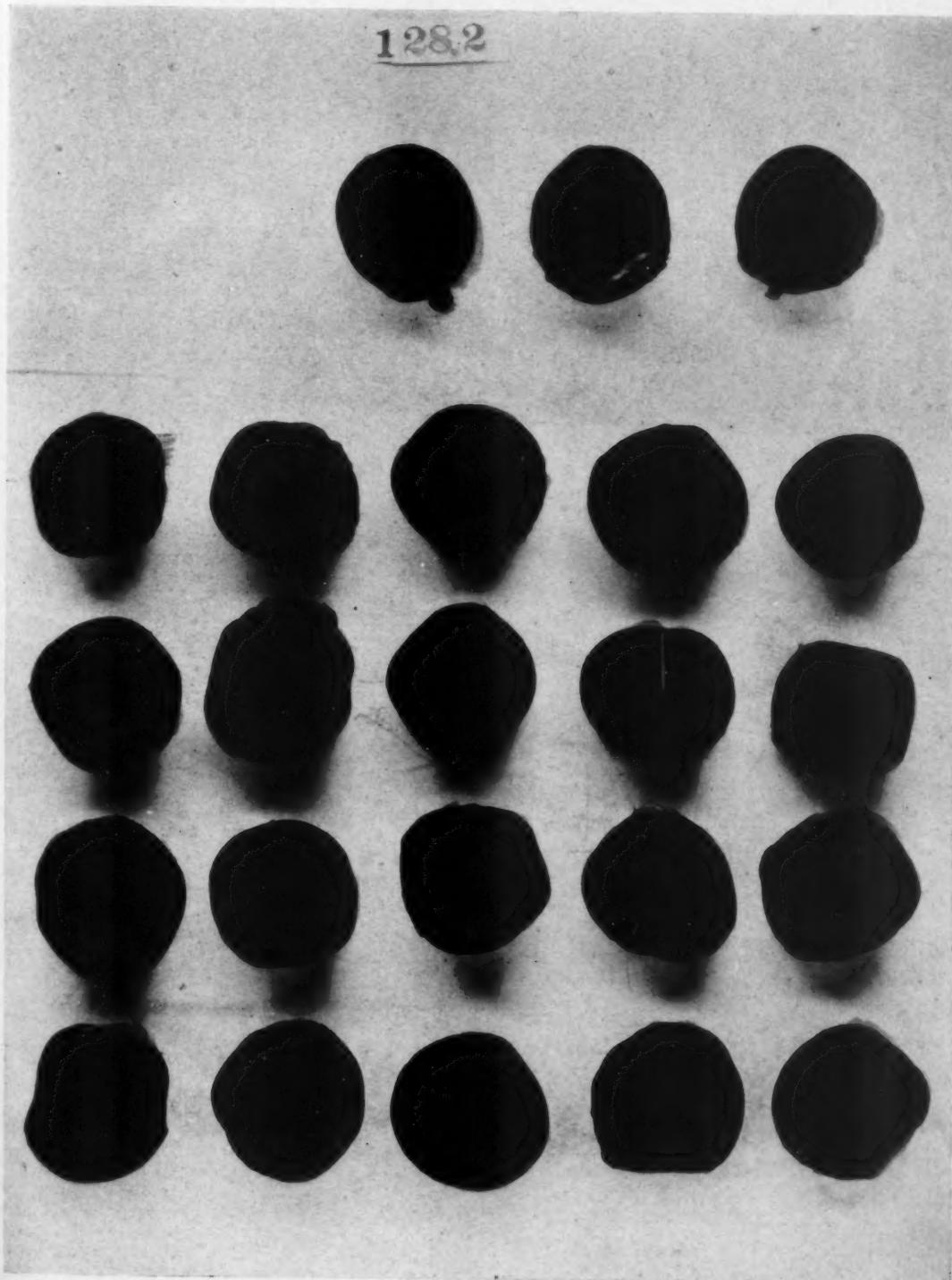


Figure 2—Batch 128.2 at End of Observation Period; 3 Out of 22 Pieces Were Slightly Burst.

CAN WE PREVENT BURSTING FERMENTATION

Some inversion of sucrose always occurs during the preparation of the cream and, as this may vary somewhat with different batches of the same original composition according to rates of heating and cooling, the composition and density of the syrup portion may vary to a relatively small extent.

These preliminary experiments showed that the solids content of the syrup portion varied from 70.5 per cent, in cream prepared from 93.75 per cent sucrose and 6.25 per cent corn syrup, to 83.5 per cent, in a cream prepared from 60 per

cent sucrose and 40 per cent glucose, approximately the maximum percentage of glucose which is ordinarily used in making cream. These values represent a variation of about 13 per cent in solids content from samples containing the lowest to those containing the highest proportions of corn syrup.

The limiting minimum value is evidently about 67 per cent, the solubility of sucrose at ordinary temperature. This limit is rarely, if ever, reached in practice, even with cream containing no corn syrup, as the presence of some invert sugar (or

Lower solids in hand-rolls lower resistance to fermentation

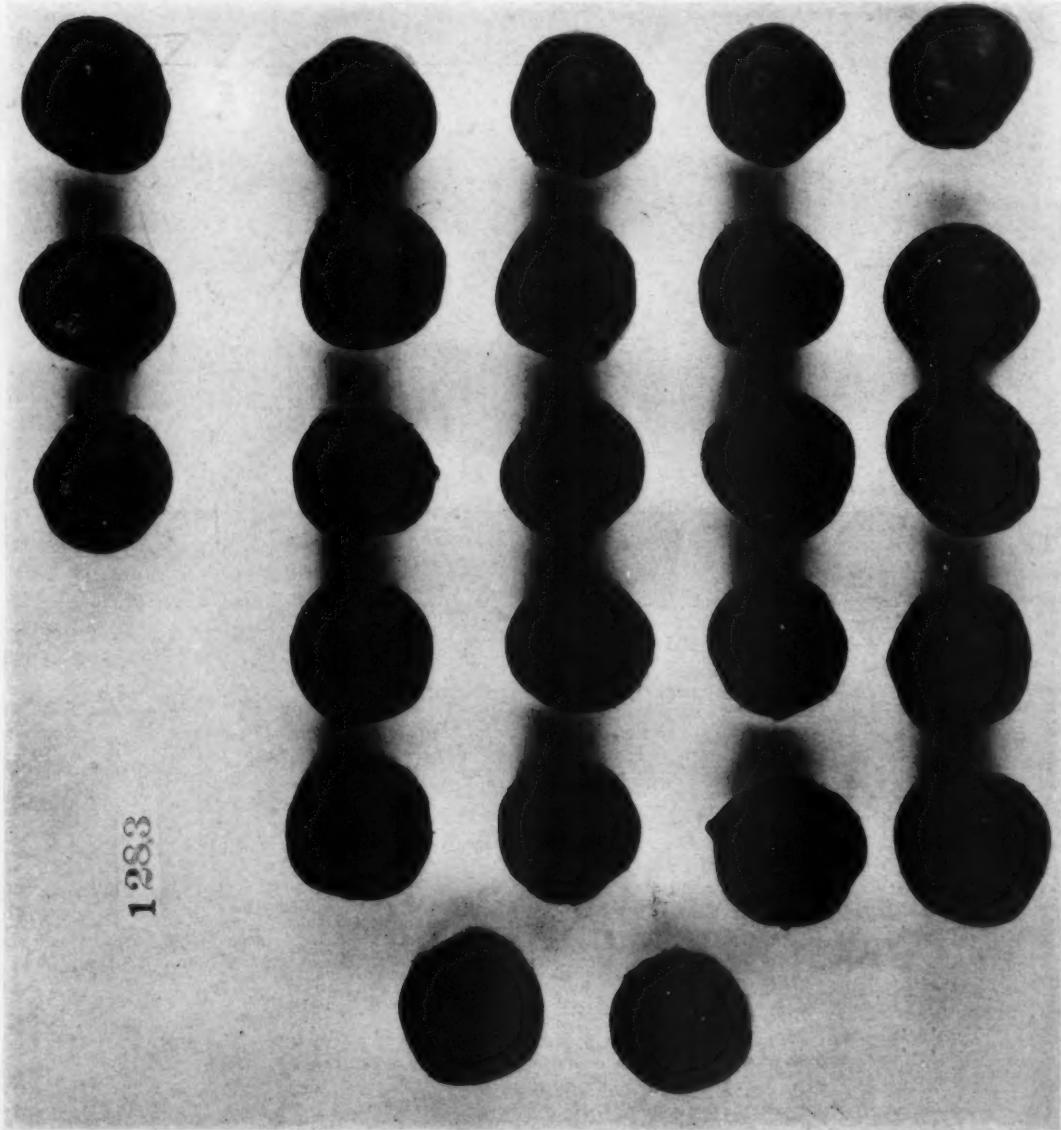


Figure 3—Batch 128.3 at End of Observation Period; 3 Out of 24 Pieces Were Slightly Burst.

THE MANUFACTURING CONFECTIONER

Table I—Influence of the Solids Content of the Syrup Portion of Fondant on Fermentation by Highly Sugar-Tolerant Yeast

Batch No.	Sucrose (Cane or Beet Sugar) Ratio.	Solids in Syrup Portion of Fondant.	Invertase ^a Added.	Water ^b Added.	Number of Burst Pieces on:												
					Oct. 17	Oct. 26	Nov. 2	Nov. 6	Nov. 11	Nov. 16	Nov. 21	Dec. 1	Dec. 7	Dec. 23	Dec. 30	Jan. 16	
Cast:					Cubic centimeters.	Cubic centimeters.											
125.2 ^c	3:2 ^d	83.5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	
126 ^e	2:1 ^d	82.2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	
125 ^a	3:1 ^d	79.1	28	0	1	0	0	0	0	0	0	0	0	4	4	4	
126.2 ^f	3:1 ^d	79.9	30	1	0	0	0	0	0	0	0	0	0	0	0	0	
126.3 ^f	4:1 ^d	79.2	29	1	0	0	0	0	0	0	0	0	0	0	0	0	
127 ^g	4:1 ^d	77.8	7	0	1	0	0	0	0	0	0	0	0	1	2	2	
127.1 ^g	5:1 ^d	77.5	8	0	1	2	2	2	2	2	2	2	2	2	10	11	
127.2 ^g	5:1 ^d	78.4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
Hand-rolled:																	
128 ^h	6:1 ^d	79.9	2	1	0	0	0	0	0	0	0	0	0	0	0	0	
128.1 ^h	6:1 ^d	77.0	9	0	1	0	0	0	0	0	0	0	0	0	0	0	
128.2 ^h	7:1 ^d	76.2	10	0	0	0	0	0	0	0	0	0	0	0	0	0	
128.3 ^h	10:1 ^d	75.5	12	0	0	0	0	0	0	0	0	0	0	0	0	0	
129.1 ⁱ	7:1 ^d	77.4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	
129.2 ⁱ	7:1 ^d	75.1	13	0	1	0	0	0	0	0	0	0	0	0	0	0	
129.3 ⁱ	10:1 ^d	74.5	14	0	0	0	0	0	0	0	0	0	0	0	0	0	

^a25 pieces taken.

^b26 pieces taken.

^cRatio by weight of sucrose to corn syrup having a solids content of 82.3 per cent.

^dRatio by weight of sucrose to invert sugar syrup having a solids content of 80.8 per cent.

corn syrup) is desirable in order to prevent the formation of sucrose crystals large enough to cause a granular consistency.

The presence of invert sugar is obtained in commercial practice either by adding an invert sugar syrup or by using an inverting agent, such as cream of tartar. It is evident that there is sufficient variation in the solids content of the syrup portion of cream to be of distinct significance in determining whether or not fermentation occurs. Further data of this character are shown in Table I for cream containing no invertase.

Inoculation Experiments

In order to determine whether or not the solids content of the syrup portion of cream could be increased sufficiently by the action of invertase to prevent fermentation, lots of chocolate-coated creams were prepared from syrups of different composition so as to cover approximately the range of solids concentration discussed. Ten per cent of frappé prepared from dried egg albumin, sucrose and corn syrup was added to each lot of cream. In some cases a standard invertase preparation was added in the proportion of 1 cubic centimeter to 460 grams of cream.

In these cases 0.5 cubic centimeter of citric acid solution (30 grams in 100 cc.) per 460 grams of cream was added in order to give the approximate optimum acidity for invertase activity. In the corresponding batches of otherwise the same composition, water was substituted for the invertase.

These lots of candy, with the exception of a few controls, were inoculated on September 25, 1925, with a culture of yeast which had been isolated by Church¹ from samples of commercial candy that had undergone fermentation and that had been furnished by the manufacturers. In order to introduce as nearly as possible the same quantity into each piece of candy, the yeast was distributed in about 20 cubic centimeters of syrup from maraschino-type cherries by thoroughly

^ePer 460 grams of fondant.

^fBatch 129.2 showed 2 burst pieces on October 14 and 2 on October 15.

^gBatch 129.3 showed 1 burst piece on October 10, 3 on October 14, and 4 on October 15.

mixing in a small flask. After making a small opening in the bottom of each piece of candy with a scalpel, the tip of a platinum needle was dipped into the syrup and immediately plunged into the opening in the bottom of each piece of candy. The opening was then sealed with chocolate, and the entire bottom of each piece redipped in chocolate. The lots were then placed on trays and kept at room temperature for observation.

During the period September 28 to October 14, syrup was expressed from the fondant from pieces of each lot of candy by means of the press already described, and the solids content was determined from the refractometer reading. Observations of the experimental samples were made at intervals until January 16, 1926. Photographs of all batches were taken on November 11, 1925, and January 19, 1926. The data relating to these inoculated experimental batches are given in Table I. Figures 2, 3, 4, 5, and 6 show batches 128.2, 128.3, 129.1, 129.2, and 129.3, on January 19, 1926, the end of the observation period.

The beneficial effect of invertase in preventing fermentation is shown conclusively by a comparison of batch 129.1 with batch 129.2, 128 with 128.1, 127.1 with 127.2, 126.3 with 127, and 125 with 126.2. Bursting did not occur in any batch to which invertase was added. If the lots containing invertase are excluded, the proportion of burst pieces increases with the increase in the ratio of sucrose to corn syrup or of sucrose to invert sugar syrup—i.e., as the solids content of the syrup decreases. The lowest solids content was 74.5 per cent and the highest was approximately 83.5 per cent. It appears that the percentage of solids at which fermentation just begins to be inhibited under the experimental conditions of infection is about 79 per cent. Batch 125, the syrup of which contained 79.1 per cent solids, showed only 4 burst pieces. Batches 127.2 and 129.1 contained only 78.4 per cent and 77.4 per cent solids, respectively, on October 1 and October 3, and yet showed no fermentation. However, these batches contained invertase, and as a

Partial List of Users

The Campfire Co.	.....	4
Shotwell Mfg. Co.	.....	4
Fred W. Amend Co.	.....	2
The Cracker Jack Co.	.....	6
E. J. Brach & Son	.....	2
E. H. Edwards Co.	.....	4
Farley Candy Co.	.....	1
Kibbe Bros. Co.	.....	1
Mason, Au&Magenheimer	.....	1
Henry Heide, Inc.	.....	4
De Luxe Mallow Co.	.....	1
Hardie Brothers Co.	.....	1
Dilling & Co.	.....	1
Eline's, Inc.	.....	2
Loft Incorporated.	.....	2
National Candy Co.	.....	2
Kroger Grocery & Baking Co.	.....	2
Kneefel-Bates Mfg. Co.	.....	1
Boston Marshmallow & Candy Works	.....	2
Bunte Brothers	2
Walter Lowney Co., Ltd.	2
Corn Products Refining Co.	10
A. J. Caley & Sons.	2

600

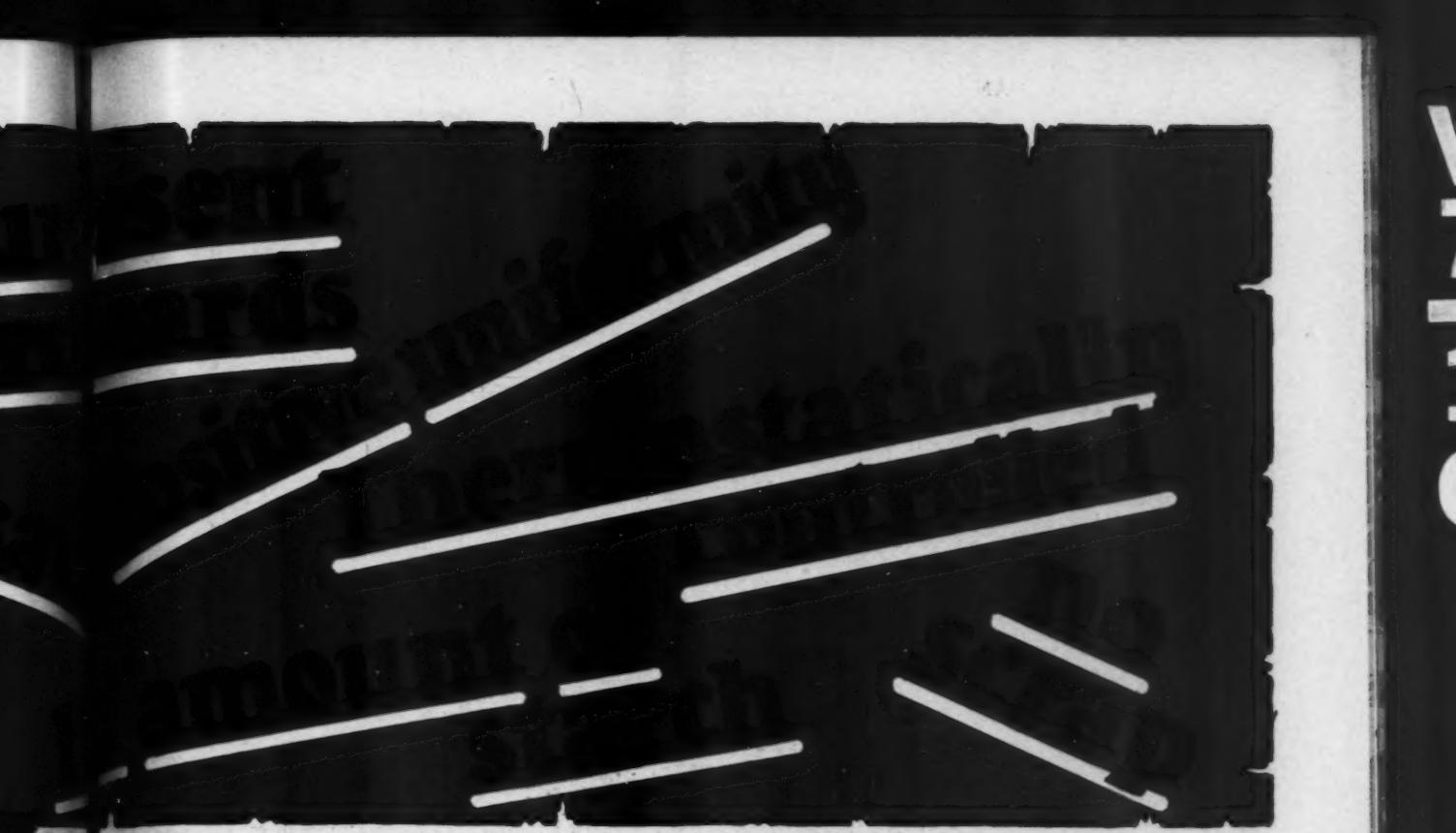
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factory for your power
plants or installations
you can have
the most accurate
and reliable control
of temperature ever
afforded.

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this watch
ways on re
recording of
temperatures,
mitting the ch
of one day's op
tion with another
assuring per
uniformity. All
work is done
—scientifically
in "established".

600



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Conditioning System

CAN WE PREVENT BURSTING FERMENTATION

result of inversion the density of the syrup was evidently increasing at a sufficiently rapid rate to hold the yeast in check. On the other hand, the solids content of the syrup in the lots which did not contain invertase remained practically constant, except where fermentation and bursting occurred, with resulting rapid drying of the cream.

The Findings

It is evident, then, that fermentation by even highly sugar-tolerant yeasts can be controlled in a practical manner by increasing the solids concentration of the syrup portion to approximately 79 per cent or over, through the action of invertase. It is necessary that inversion by invertase, and the resulting increase in density of the syrup, proceed at a sufficiently rapid rate to prevent the yeast from starting active fermentation, particularly in cases where the batch composition is such as to produce a relatively low initial solids concentration. It is conceivable that where fondants containing a very high proportion of sucrose have been heavily infected with sugar-tolerant yeasts, the fermentation might outstrip the inversion and increase in density, thus causing enough evolution of gas to burst the chocolate coating before the solids concentration becomes sufficiently high to stop further fermentation. In order to prevent such a possibility, it is advisable to use enough corn syrup to produce a syrup portion in the cream of approximately 75 per cent solids content, so that invertase action may start from a high enough level to hold fermentation in check during the initial stages of increase in syrup density.

In types of candy where it is not desired to use corn syrup, addition of invert sugar syrup will serve the purpose of increasing the syrup density without materially changing the character of the confection. It is possible to use enough invert sugar syrup in the batch to obtain an initial percentage of solids in the syrup portion of the cream of 79 per cent or over. With very high proportions of invert sugar syrup there is difficulty, however, in producing molded cream pieces with firm enough consistency to permit handling prior to coating with chocolate. It is decidedly preferable to rely upon the action of invertase, after the cream pieces are coated, to increase the percentage of solids above approximately 75 per cent. This also makes it possible to produce molded cream pieces firm enough to eliminate "scrap" during mechanical handling, and to obtain the desired consistency after the pieces are coated with chocolate. The difficulty discussed may also be controlled by increasing the proportion of invertase so as to accelerate the inversion. Figures 2, 3, 4, 5, and 6 give a good idea of the appearance of some of the batches here discussed.

Why Bursting Occurs in Hand Rolls More Than in Cast Creams

As bursting fermentation has occurred to a much greater extent in hand-rolled than in cast creams, it has usually been assumed that this difference is due to infection of the cream pieces by the hands of the employees who mold the

fondant into centers for coating with chocolate. In fact, in some candy factories special precautions have been taken to prevent infection from this source. On the other hand, cast cream centers are produced and handled largely by mechanical operations.

Our data indicate that infection in this manner, even if it is a factor, must be regarded as a minor one and by no means of determining influence. It is evident that the difference in susceptibility of hand-rolled and cast creams to fermentation lies primarily in the lower solids content of the syrup in the hand-rolled creams and its lower resistance to fermentation. This is a corollary to the fact that hand-rolled creams are made from fondant which contains such a high proportion of sucrose as to make it difficult to render it sufficiently fluid to be cast in starch molds. It is therefore necessary to mold the individual pieces by hand or (during recent years) by a special type of molding machine.

Rate of Increase in Syrup Density by Inversion

It is apparent that the solids content of the syrup in cream should be raised to, and preferably above, 79 per cent at a rate, after the goods are finished, depending on the virulence of infection. In Table II are presented some data showing the rate of increase, at room temperature, in the solids content of syrup in cream prepared from 90 per cent sucrose and 10 per cent corn syrup, and to which was added 1 cubic centimeter of invertase solution per 100 grams of fondant. The solids content of the syrup was raised from 75.9 to 79.1 per cent in seven days. The rate of increase in percentage of solids gradually decreased, but in the early stages of inversion a syrup density sufficiently high to prevent fermentation was rapidly attained.

Experiments with Cordialized Fruit Centers

The inoculation experiments here described were made with chocolate-coated creams containing plain fondant. So-called cordialized fruit centers, in which the fondant contains pieces of imbedded fruit, present a special case distinct from that of plain cream. The situation with regard to density of the syrup is modified owing to diffusion of comparatively low-density juice into the surrounding cream, thus producing a zone of lower density syrup around the fruit. This condition tends to accelerate fermentation.

Where centers consisting of fruit coated with fondant are used, addition of invertase in greater

Table II—Rate of Increase in Solids Content of Fondant¹ Syrup by Invertase Inversion²

Solids in Syrup.	Date of Examination.	Age.	Solids in Syrup.	Date of Examination.	Age.
Per cent.		Days.	Per cent.		Days.
75.9	September 24	2	80.4	October 11	19
78.6	September 29	7	80.5	October 15	23
79.1	October 1	9	80.9	October 18	26
79.8	October 4	12	81.1	October 22	30
80.3	October 8	16			

¹90 per cent sucrose and 10 per cent corn syrup.

²1 cc. of standard invertase added per 100 grams of fondant.

A victory for scientific candy making!

Invertase employed to control inversion and increase syrup density

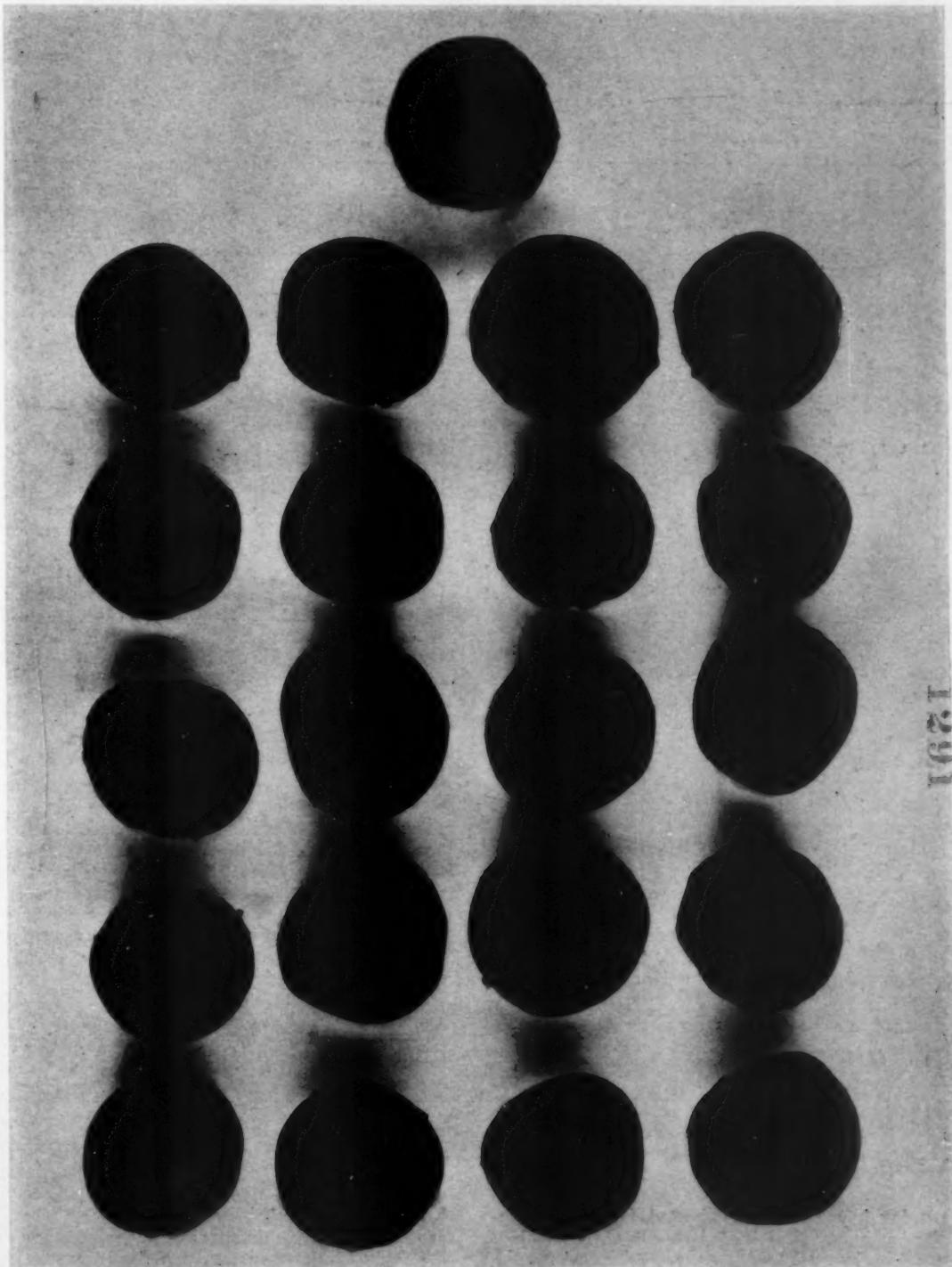


Figure 4—Batch 129.1 at End of Observation Period; None of the 21 Pieces Were Burst.

CAN WE PREVENT BURSTING FERMENTATION

Table III—Effect of Heat Treatment of Fruit on Fermentation

Treatment.	Number of Pieces Burst at End of:																		
	60 days	61 days	64 days	67 days	73 days	75 days	84 days	87 days	92 days	95 days	99 days	102 days	106 days	109 days	121 days	124 days	134 days	137 days	
Uninoculated and not heated:																			
Cherries	0	.	1	3	17	.	31	12	47	17	48	20	48	24	48	31	50	39	50
Pineapple cubes.....	..	1	1	..	6	..	12	..	17	..	20	..	24	..	31	..	39	..	
Inoculated but not heated:																			
Cherries	0	.	6	16	..	24	32	46	41	48	41	48	43	49	45	49	47	50	
Pineapple cubes.....	..	8	12	..	22	..	32	..	41	..	41	..	43	..	45	..	47	..	
Inoculated and heated to 176° F.:																			
Cherries	1	.	8	9	15	..	19	26	30	34	33	37	34	39	41	44	44	46	
Pineapple cubes.....	..	5	7	..	15	..	26	..	31	..	33	..	34	..	41	..	44	..	
Inoculated and heated to boiling temperature:																			
Cherries	0	.	1	1	10	..	25	11	31	15	31	15	33	18	35	20	39	25	
Pineapple cubes.....	..	2	3	..	10	..	25	..	31	..	31	..	33	..	35	..	39	..	

proportion than in plain cream has been proposed by Paine and Hamilton³ for the purpose of producing so-called "liquid centers," in which the fondant is almost or entirely dissolved after the centers are coated with chocolate. The addition of this increased proportion of invertase results in more rapid inversion than in plain fondant and counteracts to a great extent the dilution of the fondant syrup by the fruit juice. Observation of a number of batches of cordialized fruit center candy to which invertase had been added showed that fermentation occurred only rarely. However, as examination of several samples of dipping fruits used in preparing this type of confection showed the presence of large quantities of yeasts, and as previous investigations¹ of samples of fermented commercial candy had shown bursting fermentation to be associated with the presence of fruit in most cases, it was considered desirable to reduce infection from this source, as well as to increase the resistance of the syrup of the fondant to fermentation.

Heat Treatment of Dipping Fruits

In preliminary experiments maraschino-type cherries, pineapple cubes, peach cubes, and raisins were heated to different temperatures for varying lengths of time. A piece of each fruit representing each heat treatment was then imbedded in fondant in a small glass bottle, so as to reproduce the conditions prevailing in fruit centers and also permit observation. These fruits had been previously inoculated with a culture of highly sugar-tolerant yeasts isolated from fermented candy. Distinctions could be made to some extent, according to the production of bubbles of gas around the fruit. In general, this method of studying fermentation of fondant was not satisfactory and served merely as an approximation.

In further experiments, about 2 gallons of each kind of fruit, including the syrup in which it was packed, were inoculated with a vigorously growing culture of the highly sugar-tolerant yeast mentioned, a small proportion having been removed before inoculation to serve as a control. After standing in a covered vessel about two weeks with occasional stirring, another small sample was withdrawn to serve as a control representing inoculated but unheated fruit. Half of the batch was then heated at 80° C. (176° F.) for 15 minutes in a small covered steam-jacketed kettle, and the remaining portion was heated for the same length of time at boiling temperature.

The fruit of each batch was drained free from syrup. Fifty pieces of each lot were coated with fondant prepared from 7 parts of sucrose to 1 part of invert sugar syrup and then with chocolate. The syrup in this fondant had a solids content of about 74.5 per cent.

The observations made with pineapple cubes and cherries are shown in Table III. Heating for 15 minutes at 80° C. (176° F.) was not sufficient to materially retard fermentation. Heating at boiling temperature for 15 minutes checked fermentation materially, but did not stop it. The proportion of pieces which burst within two months was small for all lots, particularly for those heated at boiling temperature.

During the early part of the observation period the proportion of burst pieces in the inoculated lots heated at boiling temperature was small as compared with those in the inoculated and unheated lots, but increased rapidly toward the end of this period, especially with pineapple cubes. Although fermentation after heating at boiling temperature for 15 minutes is retarded, it would apparently attain a value equal to that of the inoculated and unheated lots, provided sufficient time were allowed. The uninoculated and unheated lots showed the same number of burst pieces at the end of the observation period as the inoculated and unheated lots in the case of cherries and almost as many in the case of pineapple cubes, showing that the fruit was strongly infected with yeast before inoculation.

It seems evident that reliance cannot be placed upon heating alone. Heating at boiling temperature for longer than 15 minutes would have retarded fermentation to a still greater extent, but much increase in time of heating is not feasible on account of its adverse effect on the flavor and texture of the fruit. Even boiling for 15 minutes materially softened raisins and peach cubes. Cherries and pineapple cubes withstood this treatment with little deterioration in quality.

The Best Method to Combat Fermentation in Fruit Centers

The best plan in combating fermentation in fruit centers is to combine the use of a liberal quantity of invertase with heating at boiling temperature for the maximum period which does not cause objectionable deterioration in the quality of the fruit. This maximum period will vary with the kind of fruit and to some extent with its condition.

You can prevent this—Are you?

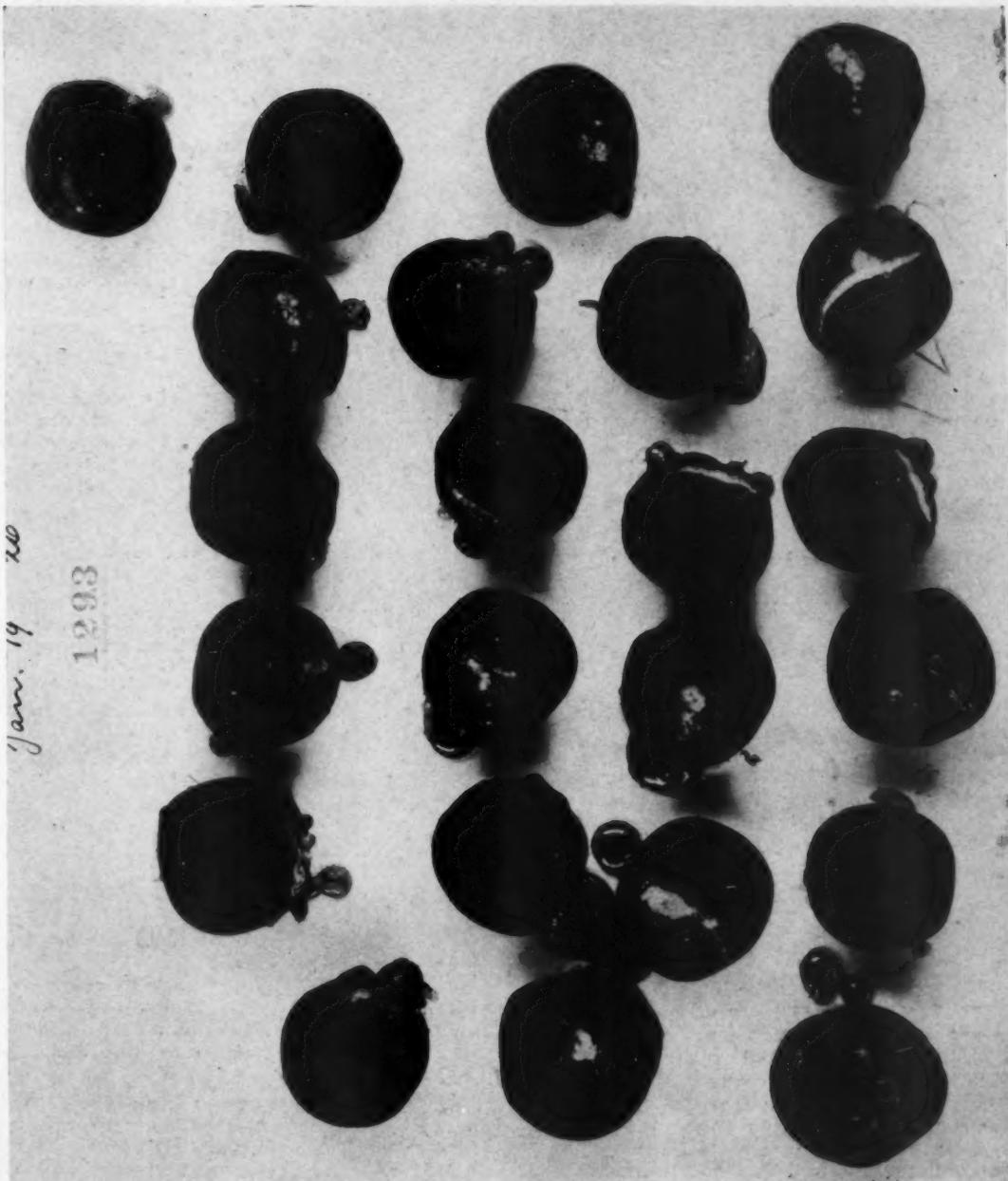


Figure 6—Batch 129.3 at End of Observation Period. All 23 Pieces Were Burst.

Observation of numerous batches of cordialized fruit-center candy showed that when invertase was added in about twice the proportion used in plain fondant candy, fermentation occurred only rarely. The use of invertase alone in this type of confectionery solves the problem to a great extent. Although no controlled experiments in which the use of invertase was combined with prelim-

inary heat treatment of the fruit have been made, it seems certain from the foregoing considerations that this would reduce fermentation to a point of practical negligibility.

In the experiment reported in Table I, the standard invertase preparation was used in the proportion of practically 100 cubic centimeters to

(Continued on page 53)



A wire stretched between the ends of an iron frame is used to turn over the fragile centers in the starch.

Are "Cordial Centers" Becoming a Lost Art in America?

{ A Timely Subject Is Discussed in Practical Fashion by a Viennese "Meister" of the Old School }

Translated from the Original German Manuscript and Formulas Prepared for the Manufacturing Confectioner

BY ADOLPH SCHILDBERGER

AN IMPORTANT branch of the confectioner's art is being sadly neglected in this country. Yet abroad, cordial centers are widely employed and very popular. One cannot believe that our national tastes differ to this extent, especially after the splendid reception recently accorded to chocolate dragee work and other Continental creations. Indeed, it is hard to understand why the American confectioner has not made better use of this medium.

The old-timer winks a knowing wink and points to Prohibition. Perhaps the fact that "cordials" are usually taken to mean "liquor

"cordials" is unfortunate, for in Europe many other delightful and popular flavors have been evolved. Formulas for a few of these are included in this article.

John Barleycorn in Disguise!

Even the one-half of 1 per cent limitation need not prove an insurmountable barrier to the candy man in quest of a distinctive or novel package since very good liquor flavors may be had to comply with all the rules and regulations. Oftentimes a "trick" classification such as "fondant flavors" is used to poorly conceal a whole line of flavors strangely reminiscent of days gone by—non-alcoholic, to be sure, but from the fla-

vor standpoint, 190 proof! I have in mind one in particular. It is called "fondant flavor No. 13," or something like that, and is the finest gin flavor I have ever tasted. The wine and brandy flavors also offer possibilities in this field.

Of course, in marketing cordials the consumer must be taken into the secret. He must know that the centers are liquid or there will be the devil to pay. This is an age of extravagant frocks, not celluloid shirt-fronts. For this reason the use of one or two cordial pieces in a general assortment is risky unless they carry suitable warning signs to tip off the customer that the contents are fluid.

The labeling principle has been

productive of a great many ingenious ideas, all the way from wrapping in tinfoil and imprinting the foil with the character of the piece to using dividers which permit the names of the various pieces to be displayed on an eighth-inch wide flat strip between the rows.

The latter is quite properly intended as a means of identifying the pieces in a straight assortment of cordials. Such an assortment of luscious centers makes a fine "party" package, but it is hardly a package which one would care to patronize blindly in a semi-darkened theater unless the pieces were so small as to remove the temptation to take "two bites," or the character of the goods generally understood beforehand.

How the Cordial Center Is Made

The prime requisite to the manufacture of this type of center is warm, dry starch. The importance of the proper casting medium can hardly be exaggerated, and it is often the factor which decides the success or failure of the piece. In depositing cordials, a hot sugar syrup is cast in starch molds and the crust of sugar crystals which forms against the starch is depended upon to hold the syrup until the center is dipped. This crust will not have sufficient strength to function if the molding starch is cold or moist.

The basic procedure followed in



The time-honored finger test is most reliable for cordial work. This is a critical point in the manufacture of this class of goods.

the manufacture of cordials is practically the same for all flavors. Sugar is cooked with pure water (preferably distilled), the flavoring medium is then added, and the resulting syrup cast in warm starch.

Immediately after casting, dry starch is sifted over the centers to assist in the formation of a crust on the top of the piece. After remaining in the starch for from 3 to 4 hours, the centers are turned over so that sufficient sugar will crystallize on the flat side, or top, which is naturally the weakest

side of the structure of crystals. This is accomplished by means of a stiff wire which is run through the starch until it is directly under a row of centers. When the wire is pulled up, the centers are lifted and overturned. The operation is repeated until all of the centers are lying on their flat sides. The centers are now permitted to stand at least 12 hours to strengthen the crust, after which they may be dusted off and dipped in chocolate.

These operations are best done by hand, as the centers are very fragile and easily broken by the mogul. A large number can be done at once by placing them on a sieve and brushing with a soft brush. When handled in this manner, breakage is reduced to a minimum.

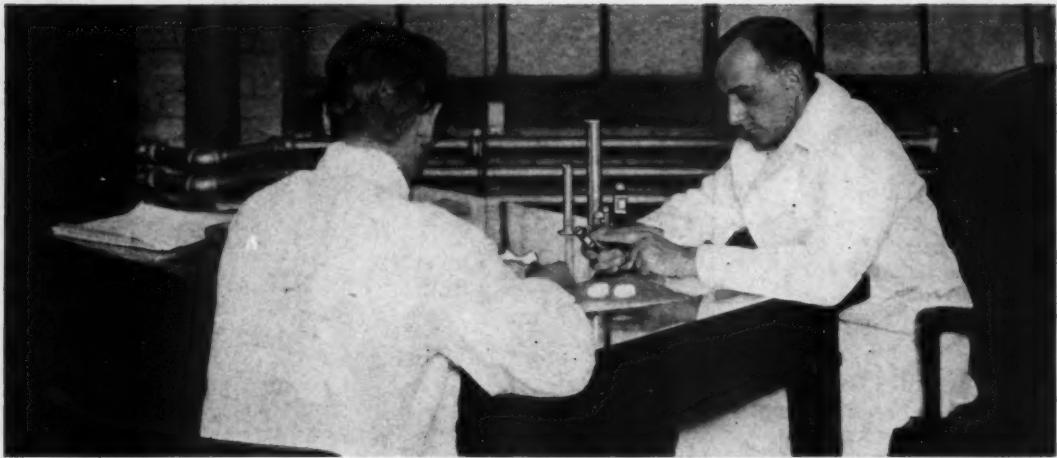
Reliability of the Finger Test

The temperature to which the sugar syrup is ordinarily cooked is 228 degrees Fahrenheit. However, if the added flavor contains water, due allowance must be made as indicated in the formulas, by increasing the cook to take care of it. Instead of the thermometer, the finger test may be used to determine the cook of cordials and is very reliable. A portion of the sugar syrup is taken between the thumb and forefinger and the two fingers separated slightly. At the proper cook, a short thread is formed, and when this thread

(Continued on page 49)



Drop adhering to finger after thread breaks.



Like Jacob's coat, these indicators are of many colors. For a given range in the pH scale, each of them turns a definite hue. By getting the color reactions of two or more of these indicators to a test sample of your batch, the consistency of that marshmallow which you have there could have been accurately predicted and the batch saved before casting.

The "Super" Gets the Low Down on pH

and discovers that there is nothing highbrow the way it carries on in his marshmallow batch

by Norman W. Kempf,

Chemical Engineer

"YOU know, Bill," said the superintendent as he stood watching the chemist transfer colored liquids from one glass container to another, "since that batch of marshmallow went 'soupy' on us the other day, Joe's been blaming everything on the gelatine. And I don't think it's such bad gelatine. We've been using it now for five years and it's always worked out all right. But the minute we get a new cream foreman, p'llooey! the gelatine is no good."

Bill looked up from his beakers and graduates for a moment before he replied. "The Jellico people were going to send somebody over to talk to you about it. Has he shown up yet?"

"Yea-ah," came from the superintendent disgustedly, "one of these high-hat research guys. You were out and he must have thought I was the chemist. He talked for three-quarters of an hour steady and I didn't dare open my mouth for fear I'd put my foot in it—all about 'piff'—p-h, or something like that. What are you laughing about?"

"You *will* pose for a chemist! Serves you right."

"Well, it may have been funny for some

folks, but I want to tell you, it was tragedy for me—say, what in heck is p-h, anyhow? I remember he said the gelatine had a p-h of four-point-five and the batch was close to neutral. What's that got to do with wrecking a good batch of marshmallow?"

Bill laid aside his bright-colored liquids with an air of resignation. "It's a long story, Ed—"

"Then I think I'd better be going—"

"Hold on, there! You always do that! Interrupt what I'm doing to get me started on a long-winded explanation and then you beat it! Anyway, it's so dog-gone simple, even you ought to be able to understand it."

The superintendent, it seemed a trifle reluctantly, walked over as he had done on so many similar occasions before, and sat down at Bill's desk. "Well," he said pointedly, as Bill sat down beside him, "don't forget I have a new man upstairs; I may have to keep an eye on him occasionally."

"Water, ordinary garden hose water, is the basis of the whole thing. As you probably know, water is composed of two elements, hydrogen and oxygen, there being

GAIR PACKAGES



Cartons De Luxe

WE are in an age of pageantry and artistic feeling. Public taste is sophisticated and it is a danger to the merchant who fails to understand its influence upon buying. Whether merchandise is a necessity or a luxury, it has an affinity in certain colors or color schemes, and the first step toward a consistent design is to discover the nature of this kinship. Such designs are swift and engaging invitations to buy. Sixty-four years of laboratory experiment and study in the reactions of color and design upon merchandising have placed Gair Cartons at the front as sales promoters.

Red is like the crash of cymbals, yellow enriches like the sheen of gold, blue is

serenely cool and is seen at the greatest distance. Merchandise is a shifting mass of color and the most colorful thing in merchandise is the Package. In deft hands, design gives countenance, and color gives character to your Carton, and the vogue which changes with time should be anticipated in the artistic treatment.



Our Department of Design consists of expert colorists, artists and designers of structure. Their united experience in determining design, color and illusion of size is at your command.



The Big Carton

THE "Tonnage" Carton is a masterpiece of fast and economical production. The new finishing department of our Piermont Division was built around the "Tonnage" Carton, so to speak. The three box board machines pour their daily output into the logically adjourned printing and lithographing departments, which, in turn, feed the cutters and creasers, which convert systematically just below in a realm of their own. Vast and scientifically appointed as the plant is, the movement of material from the dry end of the box board machines on through these stages to the gluing and packing departments is almost an automatic gravitation to the freight trains on the siding.

Speeding and maximum perfection are the monitors of big carton production. They are for the classic products of the land—the products that feed, solace and serve the population: cereals, tobaccos, cleansers, sport goods and the weighty things that go in big boxes. Heresign and strength contest their importance.



Our engineers adapt the Carton to the merchandise to be packed. This work of invention is in the hands of our experts who invite your problems.

Gair Sales Builders

THE golden area of the show case top and the counter is the coveted spot for the Display Container. A silent contest is forever going on for the prized location. It belongs to the deserving. The retailer is human; therefore, like his customers, has sense and feeling for decorative effect. Consequently, the humble and unimpressive display suffers a place beneath the counter instead of one on top. But economy in design and color does not rob the Display Container of distinction. It is the skill and experience with which limited materials are employed that give Gair Display Containers pre-eminence. They are sales builders in good taste and win the response of the retailer.

Gair Display Containers are not silent salesmen. If art has appeal and color is language to the eye, their salesmanship is both eloquent and active. There is no substitute for the trite term "Gaircraft." It means artistic and mechanical perfection in Display Containers, which have so effectively influenced the present-day systems of merchandising.

Our Department of Design takes care of the aesthetic and the practical features of the Display Container. The artist blends his work with the merchandise, and the mechanical structure is built to get the best display. Artist and architect work side by side, and our multi-color printing presses and lithographing machines reproduce their efforts sensitively.



Practical Packagery

BUT the aesthetics of the Carton are something apart from the way it is built for practical service. The Manager of Publicity is critical of the one and the Superintendent of Production is keenly alive to the perfections of the other. A masterpiece of line and color is an execration in S. P.'s eyes if the Carton upon which the printer and lithographer have extended themselves blocks the automatic filler because of some structural defect.

Gair Cartons are articles of precision. Your production record reflects the accuracy with which its seams are glued, its tucks are made and its creases are formed. But the pivotal factor in automatic packing and the one that supports the machine's capacity is the character and texture of the box board of which the Carton is made. The smooth, snappy, pliant Carton yields to the process. It also answers the call of the printing and lithographing presses which carry the vignette and successfully takes the many colored composition of the engraver.

The square Cosmetic Carton is precious in size and appearance, but the Cartons that reach the pantry shelves filled with the necessities of life and the every-day products of the land declare the vast extent and importance of the system of merchandising that the Carton has made possible. There are no two Gair Cartons alike. They are kept as unlike as possible to preserve the identity and official character of each manufacturer's goods, yet consistently holding to the colors that compliment their purpose.

Their realm long ago reached beyond the pantry shelf. They have become the vehicles of universal merchandise, and if some form of article does not fit within the conventional angles of a Carton, the Gair Carton is made to fit the unconventional angles of the article.

Gair Box Board is the foundation for the peculiarities of the workmanship which stamps the finished Carton as a Gair Product. The six big Gair Box Board Mills are linked from New York to Chicago. We control the quality of twelve hundred tons of box board per day, setting up permanent standards, colors and finishes that minimize the ever-present danger of variation, the enemy of printing and lithography and the deterrent to easy automatic packaging.



Gair Unit Service

We manufacture from the ground up. Our paper machines produce over twelve hundred tons of box board daily.

We engrave, print and lithograph in the largest and best equipped plant of its kind in the world.

Gair Products flow uninterruptedly from the box board machines through all the processes to the shipping floor with studied economy.

Our chemists improve our processes and test our products to ensure your receiving the best that the art affords.

Our Department of Design invents and adapts folding and other types of Cartons and Boxes to every conceivable size and shape of merchandise.

We modernize the designs and color schemes of Cartons that time has left behind in the course of merchandising progress. We do it in a way that fully protects their identity.

The Folding Box, Display Container, Gairco Box, Corrugated and Fibre Shipping Case go one within the other and together constitute a unit of merchandise.

ROBERT GAIR COMPANY

GRAYBAR BLDG., 420 LEXINGTON AVE., NEW YORK CITY

BOX BOARD MILLS—1200 TONS DAILY

NEW LONDON, CONN. TONAWANDA, N. Y. PIERMONT, N. Y. HAVERHILL, MASS. CHICAGO, ILL. QUINCY, ILL.



two molecules of hydrogen for every one of oxygen. Suppose we write that down:



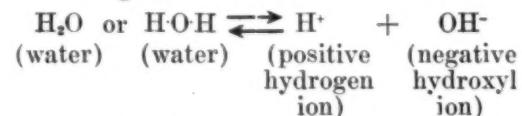
If our water is chemically pure, that's all it should contain. Now, pure water is not the good conductor of electricity it is commonly supposed to be. Experiments have shown that the small amount of current which does pass through water is not carried by the water itself, but by something in the water—"

"Slow up, Bill, we're going around a curve. What kind of water is this you're handing me?—It's pure, but it has a stick in it—"

"That's right, Ed. But that something is not an impurity in the water but particles of the water molecules themselves carrying tiny charges of electricity."

"That must be how the prohibitionists can get such a kick out of it. I never could.

"The water 'dissociates' into positive and negative 'ions,' the process being something akin to a chemical reaction:



We call this a 'reversible' reaction because it is going on constantly in both directions. Which is to say, some of the water is constantly breaking up to form ions and the ions are constantly reuniting to form water again:

Right to left, breaking up into ions,—
 $\text{H}_2\text{O} = \text{H}^+ + \text{OH}^-$.

Left to right, reuniting to form water,—
 $\text{H}^+ + \text{OH}^- = \text{H}_2\text{O}$.

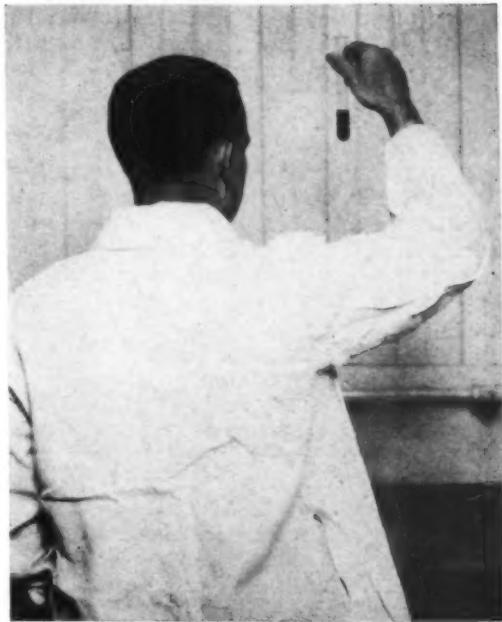
However, the breaking down reaction is so much slower than the building up reaction that the amount of dissociated water present, or ions, as we call them, is always very small. Are you with me, Ed?"

The superintendent nodded assent.

"Physical chemistry has determined a number of interesting things about this reaction. One is that the product of the concentration, or quantity present, of the positive hydrogen ions (H^+) and the concentration of the negative hydroxyl ions (OH^-) is always the same. Do you think you will remember that?

$$\text{Cone. H}^+ \times \text{Cone. OH}^- = \text{Constant (K).}$$

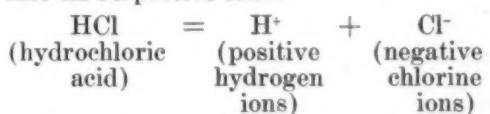
There you have the meat of the whole thing, for it means that whenever water is present in your batch, any increase in the concentration of the positive hydrogen ions will necessitate a corresponding decrease in the concentration of the negative hydroxyl ions."



The use of color indicators is something entirely new in pH determinations.

"I thought so. It's just a cheap trick to make work to keep you busy. Every time we get a batch in the works, I suppose you'd like me to call you up so you can take its pulse?" The superintendent appeared to enjoy getting these bits of repartee off his chest but it was evident that his thinking apparatus was taking it all in very carefully.

"Now, suppose we add an acid of some kind to our water—let's take hydrochloric, for example. No sooner does it dissolve in the water than it, too, begins dissociating into its respective ions:



This reaction also being reversible, as are all reactions of this character, it proceeds faster from right to left than from left to right (unlike water), so that when the point of equilibrium is reached, we find that almost 95% of the acid exists in the solution in the form of hydrogen and chlorine ions. Now, do you remember what I told you about the concentration of the ions of the water? The concentration of the positive hydrogen ions, times the concentration of the negative hydroxyl ions, must always remain constant?

This relation holds true notwithstanding the fact that we have added to the water a

THE "SUPER" GETS THE LOW DOWN ON pH

large amount of additional hydrogen ions from the acid. As a result, however, the concentration of the water's hydroxyl ions has become very minute, the latter having to decrease as rapidly as the former increases."

"Very tricky," was Ed's only comment.

"But if, instead of adding acid to the water, we add a strong alkali, such as sodium hydroxide, exactly the reverse occurs. The lye breaks up into positive ions of sodium (Na^+) and negative hydroxyl ions (OH^-). In this case it is the concentration of the water's hydroxyl ions which is intensified, while the concentration of the hydrogen ions is correspondingly suppressed. The resulting solution is alkaline.

"Now, we're getting to the marshmallow. The increasing or diminishing of the concentration of the hydrogen ions in the water has a great deal to do with the behavior of any substance added to the water. The fact is, if we know what that concentration is, we can usually predict how that substance will act in the batch—"

"Every candymaker his own Ouija board!"

"The term 'pH,' which seemed to be worrying you a little while ago, is simply an arbitrary scale with which to measure the intensity or concentration of the hydrogen ion. Here you have it:

acid ————— neutral ————— alkaline
1 2 3 4 5 6 7 8 9 10 11 12 13

"I still don't get the tie-up with Joey's batch."

"Yes, you do, too. The gelatine man told you that the pH of the gelatine you were using is 4.5,—right? He also told you that the pH of your batch of marshmallow was somewhere around neutral. Most batches of candy *are*. Neutral is 7.0. Now, what he might also have told you is that that gelatine is at its maximum efficiency as it comes to you in the barrel. If you alter its pH, you impair its efficiency.

Consequently, unless the pH of your batch happens to correspond to the pH of the gelatine, you must do one of two things: either buy a gelatine with a pH corresponding to your normal batch (which would be a more or less neutral gelatine),

or adjust the pH of your batch to meet the pH of your gelatin, by adding the proper amount of acid. Unless the two agree, you are interfering with the normal action of the gelatine. Now do you see what happened to Joey's batch?"

"Say, that's great stuff," the superintendent admitted. "Do those colors you were fooling with over there have anything to do with it?"

"Yes, and they're something very new in hydrogen-ion determination. They are used to measure the pH. Certain dyes have been found to change color when the pH is changed. They are called indicators. For example, by adding Brom cresol purple to the gelatine, it turns yellow, but if I add Brom phenol blue to it, it stays blue. This tells me that the pH of the gelatine must be around 4.6.

Determining the hydrogen-ion concentration by means of color indicators instead of by the older, electrolytic method, is not entirely as accurate, but it saves a great deal of time, and time is money, these days. Then, too, a set of indicators could probably be purchased for around \$70, whereas it would be necessary to lay out several hundred dollars for the regular hydrogen-ion equipment. The chief saving, however, is in time.

A fabric mill recently incorporated a system of indicators right in with their dyeing process. They had been having a lot of trouble with occasional runs fading. Then they discovered that the pH wasn't just right and that a small amount of acid in the dye was tearing down the color. Now they run the cloth through the indicator solutions directly as it comes from the dye vats—all one continuous process. If the pH is the least bit off, the indicators change color and the process is stopped until the pH of the dye can be adjusted. They haven't had any trouble with fading since."

The superintendent thought, dreamily-eyed, for a moment and then said: "Maybe some day we'll run off little bits of candy from the mixes and find out if anything's wrong with them before we go ahead and spoil a whole batch."

"Who knows," said Bill.



WYMPUS' FIRST

For Foremen, Superintendents

CANDY PRIMER

and Candy Makers of Importance!



(With apologies to H. I. Phillips)

Lesson 1

What is this? This is a barrel of cocoa.



How big is the barrel of cocoa? It is a 200-pound barrel of cocoa.

How much does the 200-pound barrel of cocoa weigh? This 200-pound barrel of cocoa weighs exactly 179 pounds.

What kind of cocoa is in the 200-pound barrel? It don't come any cheaper.

Lesson 2

Who is this? This is Mike.

What is Mike doing? Mike is studying.

Studying what? Studying how to make chocolate cocoanut kisses.

Has Mike got the cheap cocoa? Yes.

What is Mike going to do with the cheap cocoa? He is going to use it for chocolate in the chocolate cocoanut kisses.

Why is Mike going to all that expense to make chocolate cocoanut kisses? Because he wants to open a Kandy Kitchen and sell pure homemade candy.



Lesson 3

This is the cocoanut for Mike's pure homemade cocoanut kisses.

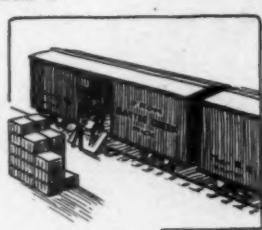
How much cocoanut? It makes no difference.



Lesson 4

What is this? This is the white corn flake.

How much corn flake does the book say Mike should put into the cocoanut kisses? Oh, lots.



Will the customers be able to tell the white corn flake from fresh cocoanut? What makes you ask?

Lesson 5

Are Mike's kisses sweet? You betcha.

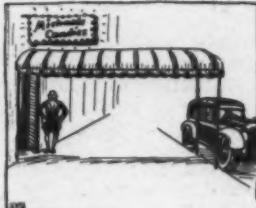
What makes Mike's kisses sweet? It is the pure cane sugar that makes Mike's kisses sweet.

Where is the pure cane sugar? The pure cane sugar is in the big steel drum.

Oh, see the big steel drum!

Lesson 6

What have we here? This is a swell candy store. It is Michael's candy store. Michael has a big chain of them now.



What's become of the little Kandy Kitchen? He has donated it to a public museum to perpetuate the memory of his beloved chocolate cocoanut kisses.

How did Michael become so prosperous? By cutting the costs low and the quality lower and getting 80 cents per pound for it.

Lesson 7

This is a silver loving cup.

To whom was it presented? To Michael, by the National Association of Candy Superintendents.

Why? Because he has just perfected a new flavor which does away with the cocoanut altogether.



Uncle Sam Enters Upon the Candy Stage

(Part II—"Forty Centuries of Sugar and Candy")

by Orville H. Kneen

This series is believed to be the first interpretive history of the candy industry which has ever been written. The series will include the Evolution of Sugar and Candies, the Development of Candy-making Machinery and Equipment, and the History of Candy Merchandising.

Confectioners having files of illustrations, price lists or equipment of historic interest are invited to collaborate with us in the preparation of this series.

EDITOR.

IN exchange for beads, bullets and other good and valuable consideration, our forefathers acquired much real estate. With it came forests of sugar-maples, the only non-tropical sugar trees in the world. The Indians had been using maple syrup for sweetening for untold centuries. The Pilgrims boiled and refined the sap, obtaining from it a white sugar practically identical in color and flavor with can sugar. They used the brown and less refined maple sugar for their candy, however, and for a century or more it was the distinctive and almost the only American candy.

The white race had out-bartered the aborigine, for in return for the vile-tasting "fire-water" which was made from the dregs of crushed sugar-cane, the Colonists received the most delicately flavored sugar that nature has ever provided. So it may fairly be said that while rum was incapacitating the red man, a new "liquid sunshine" (as maple syrup has been called) was energizing his successor.

But the production of commercial quantities of sugar from this source was slow and costly. Five gallons of maple sap were required to yield a pound of sugar. As the supply of maple sugar diminished and demand for sweeteners grew ever greater, cane sugar began to be imported from Cuba and the Indies. Jesuit missionaries carried the cane to Louisiana around 1750. Their primitive extraction methods failed. But by 1772 Cuban plantations were flourishing, if their unhappy slaves were not.

Cane Sugar's Part in the American Revolution

The great refineries of England were far from the waving cane-fields of the New World. Was it surprising that our thrifty fore-



Napoleon Bonaparte, whose industrial decrees remade the history of sugar and candy

bears should object to this extra expense of shipping their sugar supplies thousands of miles to "the tight little isle" to be refined, and returning it to the colonies? When England's tyrannical Teuton, George III, arbitrarily prohibited importation into the colonies, of raw sugar, tea, and the rum-destined molasses which had proved so useful to them in their Indian trade it was the last straw. Once again the demand for more and cheaper sugar was

an important factor in driving peaceful nations into conflict.

With the heavy fogs of succeeding winters, the smuggling of sugar was developed to a fine art. But the war of the Revolution left our colonists much too poor to cultivate their candy appetites, for candy, it has been said, reflects prosperity. The first New York directory of 1786, listing 24,000 able-bodied souls, named but one confectioner, three chocolate manufacturers, and two sugar refiners. The latter, for a side line, also made crystallized hard-sugar candies.

Brown-sugar candy and preserved fruits, either brandied or boiled down in a mixture of brandy and sugar or honey were offered by an advertiser in the New York Journal on April 18, 1776—not quite three months before the Declaration of Independence. This is believed possibly to have been the first advertisement of American candy—a worthy forerunner of our first national cooperative advertising campaign. Other favored candies of the day were sugared almonds, sugar-plums, and barley sugar—numbers whose glories were to pass undimmed, into the annals of modern merchandising.

The Heyday of the Sugar Tree

Philadelphia, then the American capital, with a population of 40,000, boasted two confectioners, two refiners, and two bakers. The latter also refined sugar in a small way. But rural candy still came from the maple tree; large quantities of maple candies were still being made as late as 1850. What our first families would have done without this benevolent "sugar



The primitive sugar mills of the early 1800's are still in use in some parts of the South

tree" is hard to imagine, for in the whole world but one other tree has been known to produce sugar in commercial quantities—the wild "nepery tree" of Ceylon, from whose sap a kind of coarse chocolate-colored sugar or "jaggery" is made. The date-palm family had provided the ancients with a sweet syrup, but whether with a solid sugar as well, there is reason to doubt.

By 1800 sugar and candy had become important items of the growing world-commerce. European confectioners devised pleasing, not to mention elaborate combinations, with flavors and colors of greater or less wholesomeness, of which more anon. With Etienne Bore's improved extraction methods, Louisiana produced in 1802 some 2,500 tons of cane sugar, but the mills were still turned by horses, cattle and slaves. A 3 cent a pound duty levied in 1816 stimulated this production and thus set precedent for the century of tariff legislation which was to follow. By 1832 the domestic crop of cane stood at 40,000 tons.

Early in the last century the New World exported the enormous total, for that day, of 250,000 tons of raw sugar, slightly less than one one-thousandth of the world's output today. Of this amount, England alone used 40 per cent—six pounds per capita per year. Although there are no statistics available, it is probable that the infant candy industry used even less of the world supply than the 8 per cent which it requires today.

Beet Sugar—New Arbiter of World Destiny

The sweetening world of the 1800's found England in full control not only of the sea-lanes, but of the refining of cane sugar. But the man of the test-tube was soon

to prove mightier than the man-of-war.

It was back in 1747 that a German chemist, named Marggraf, discovered a method of extracting crystalline sugar from the beet. Beginning with a yield of only about 1.5 per cent, many decades elapsed before beets were improved in sugar-producing quality and costs reduced to a point which warranted the building of a factory; the first was erected in Silesia in 1801. It is pointed out that the extraction of fruit-sugar from the sunflower weed, or Jerusalem artichoke is today passing through a similar, though it is said more rapid, evolution. Beets then were plotting the downfall of cane.

History will never forget that memorable occasion when, in 1805, Napoleon Bonaparte fell out with England, and lost the famous battle of Trafalgar. Napoleon countered with his inevitable trade decrees, but Britain, not to be outdone, dealt a most telling blow by cutting off the Empire's sugar supply.

The course of future genera-

tions has been more affected by the resourceful Corsican's industrial decrees, than by all his military victories. His generous bounties to the beet growers brought sugar beets to the fore as perhaps no other factor could have done in as many decades. Central Europe gradually became an industrial power to be reckoned with. In 1812 sugar was still 30 cents a pound in France, but there, as in Germany, the lowly beet steadily increased in quantity as well as in sugar-content.

Between 1825 and 1850, the nations of Europe forever abolished slave-labor—a tremendous blow at cane sugar. Cane-growing dropped off heavily, and the indomitable beet entered upon the conquest of the world which Napoleon had failed to achieve.

Following 1840, England's hold upon the sugar industry declined with the price of beet sugar. When a Frenchman invented a new refining process, worried Britons are reputed to have offered him a bribe of \$120,000 if he would give up his plant and declare the process a failure! It was the beginning of the end for England's domination of the world sugar supply.

Sugar Has Made History for 500 Years

Germany, steadily wringing higher percentages of sugar from her beets, by 1880 had taken indisputable lead; less than twenty years later her chemists had increased tenfold the original yield of the sugar beet. Today, that yield stands at over 18 per cent. Compare with the progress of the artichoke and we have a striking parallel.

Having larger quantities than she needed, Germany subsidized the industry and began the objectionable "dumping" process which was soon to make her the



28,000 tons of beets await refining at a modern mid-west sugar factory

UNCLE SAM ENTERS UPON THE CANDY STAGE



In the backwoods of the Maple-leaf Dominion maple sugar is still prepared as it was in the dawn days of American Colonial history

most hated nation on the face of the globe!

In 1900 the world was amazed to see England herself importing 92 per cent of her sugar from beet countries, largely from Germany! By 1913 half the world's 18,000,000 tons of sugar came from root crops instead of stalks, as against only 14 per cent in 1852. The closed refineries of England, Germany's reaching out for new worlds to conquer were the tinder that awaited the World War spark at Sarajevo.

Dr. Edwin E. Slosson, scientist and economist, has said: "The influence of the sugar power on history began about 500 years ago, and it has figured in international affairs ever since." Lost markets and attendant labor problems, had as sure an effect on the World War as any other cause.

Only because it is grown and processed by very low-paid labor, it is said, does cane sugar hold its own today. Yet, because it utilizes land areas hardly suitable for other crops, it doubtless will always furnish confectioners with much of their chief material. Perhaps the newest contender, artichoke sugar, a root crop even of greater hardiness than the beet, will bring about a new economic struggle for mastery of the product that has made wars and peace.

It is no secret that confectioners

of this country early realized their great advantage in being so near to large supplies of cheap sugar. It required less than half a century for them to lead the world in variety and volume of candies. As the young nation swung into its stride, a century and a quarter ago, it demanded more and more concentrated energy. Candy makers appeared in greater numbers,

to the accompaniment of steadily declining sugar prices. So far as candy was concerned, the day of the apothecary, and the amateur "compounder," had gone forever.

The Old Familiar Faces

It was in 1806 that Ridley & Company opened their candyshop in old New York. Delmonico Brothers, on whose site at 44th street and 5th avenue, candy is still being featured by the Happiness Candy Stores, R. L. Stuart, James Thompson, John Stryker and others followed in quick succession. Ten years later Boston sweet lovers were patronizing Arnold Copenhagen, Lawrence Nichols and William Fennno among others whose names have escaped us.

In that same year Philadelphia boasted twenty confectioners, among them such historic figures as Sebastian Henrion, Paul Lajas, and Sebastian Chauveau, who thirty years later was to inaugurate the Machine Age in candy. In the 30's came George Miller, Wm. N. Herring, S. S. Rennels, J. J. Richardson and others. In Baltimore, by 1831, were Joseph Bouvey, Augustus M. Price, John L. Bridges.

Prosperity smiled on the nation, and the nation fed prosperity with candy, even as you and I.

(To be continued in next month's issue.



A local exhibit of tried and true old-time maple confections

Are "Cordial Centers" Becoming a Lost Art in America?

(Continued from page 41)

breaks, the upper half forms a drop clinging to the finger. In many cases, especially in cooking small batches, the finger test is actually preferable, as thermometers are prone to error unless a large part of the stem is immersed in the liquid, and it is very important that the correct temperature be obtained, to insure the proper crust on the centers.

In making up an assortment of flavors it is convenient to prepare a stock sugar syrup (sugar cooked to 30 degrees Beaume) which can be used as a base for cooking the several flavors.

An important precaution to observe is to prevent crystallization on the side of the kettle during the cooking. This is done by brushing down the sides of the kettle with a wet clean brush frequently during the boiling.

Coffee Cordial

Thirteen ounces of a good coffee are brewed in 3 pints of water and strained through a coffee bag. Five and one-half pounds of sugar are cooked to 275 degrees Fahrenheit and mixed with the hot coffee brew. The mixture is then cooked to 228 degrees and cast immediately in warm starch. It is important that the coffee essence be hot when the two are mixed or the sugar syrup will grain off. It is suggested that the molds be made to resemble coffee beans so that the final shape of the piece will be suggestive of the bean.

Tea Cordial

Two ounces of a good black tea

are brewed in 1 pint of water for 10 to 15 minutes and passed through a cheese cloth to strain it. Six and one-half pounds of sugar are cooked to 234 degrees Fahrenheit and the hot tea poured in. The mixture is ready for casting. Tea syrup has also been successfully employed as a carrier for orange, lemon and other flavors in the making of "tea cordial assortments."

Chocolate Cordial

Ten ounces of chocolate liquor are stirred with a little sugar syrup (cooked to 30 degrees Beaume) to make a thin paste; 23 pounds of sugar are cooked to 225 degrees Fahrenheit and the paste stirred in slowly. Vanilla extract is added to taste and the mixture cast in warm starch.

Raspberry Cordial

Seven pounds of sugar are cooked with 1 pint of raspberry juice to 226 degrees Fahrenheit and immediately cast in warm starch. Other fruit flavors may be employed instead of raspberry.

Filbert, Almond and Pistachio Cordials

Twenty-five pounds of blanched roasted filberts are soaked in water for 2 hours and then passed through a three-roll refiner two or three times or until they are well milled. During the refining the mill is sprinkled with water to prevent the mass from becoming oily. The resulting paste is flavored with vanilla and sufficient water added to bring the weight

up to 40 pounds. Now 125 pounds of sugar are cooked to 232 degrees and the filbert mass stirred in, being passed through a fine sieve to strain out any lumps of nuts present. The finger test is applied to make sure that the syrup is ready for casting. The addition of a little cream to the syrup before the final cook serves to enrich the flavor.

Walnut cordial is made in the same manner, using vanilla as flavor.

Almond cordial is flavored with a few drops of oil of bitter almond.

Pistachio cordial is made with three-fourths pistachios and one-fourth almonds, and the conventional green color is usually added.

Cordial Gum Drops

Cordial gum drops are prepared in a somewhat different manner.

Ten pounds of gum arabic are dissolved in 6 quarts of water, to which 30 pounds of sugar and 7 gallons of water are added. The entire batch is next cooked to 255 degrees Fahrenheit.

After adding the flavor, the mixture is cast in hot starch and dry starch is sprinkled over the top. The centers are now baked in the hot room at a temperature of 140 degrees for two days.

It is not necessary to turn over cordial gums. After 48 hours in the hot room they may be removed through the mogul and are ready for dipping and crystallizing.

(Cordials for Dragee work will be discussed under pan work in next month's issue.)

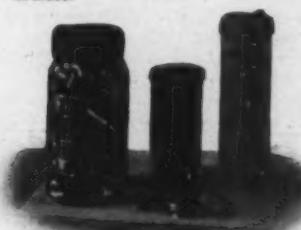
BEG YOUR PARDON

The legends applying to these two illustrations on page 41 of last issue were reversed by mistake so they are reprinted herewith in correct order, giving the proper explanation of these various types of closures reviewed in previous article.



Above: An interesting group of hard candy closures. Left: Wide mouth crown caps. Center: Anchor cap. Right: Hazel cup type.

Right: The Vacuum seal which despite its descriptive name function equally well as an airtight closure.





Velvet CHERRIES

Supreme for dipping

REPORTS indicate that Chocolate Covered Cherries will be a vital factor in the success of the holiday business. The uniform deliciousness of VELVET CHERRIES, preserved intact by a special process, will not only help you to cash in on this demand but will also add to your reputation for quality confections.

Sample and prices gladly sent on request

The C.M.Pitt & Sons Company

FORMERLY TRADING AS
THE INTERNATIONAL COMPANY
KEY HIGHWAY BOYLE & HARVEY STS.
Baltimore, Md.

"U.S. Gel."

EIGHT and one-half acres of floor space all in one building are devoted solely to the manufacture of "U. S. Gel.". In this modern plant the newest and most sanitary equipment is used to assure purity that is as close to perfect as it is possible to attain.

United States Gelatine Co.
Milwaukee, Wisconsin

NEW YORK

CHICAGO

BRANCHES

CINCINNATI

GRAND RAPIDS

Ask Me Another

1. What candy is it that President Coolidge frequently munches on as he writes?
2. What short cut in corn syrup handling has recently been introduced into tank wagon and pipe line service? (See "Corn Syrup via Pipe Line" in November issue.)
3. What raw material comprised the first typically American candy? (See "Uncle Sam Enters Upon the Sugar Stage," page 46.)
4. A pound of tin foil, colored and embossed, costs \$1.07 lb. A pound of aluminum foil, also colored and embossed, costs \$1.15 lb. Which is cheaper? Why?
5. What was Irene Castle's contribution to the weal or woe of the candy industry?
6. What are the most common "slips" uncovered in the examination of finished goods? (See "Fault-finding for Profit," page 26.)
7. The usual box liner is a 25-lb. plain glassine paper costing about 14 cents per lb. How would it affect the cost to substitute a 20-lb. glassine paper costing 16 cents per lb.?
8. How is "catalysis" employed in the making of cream goods?
9. Name an enzyme and a colloid which have revolutionized the manufacture of cream centers.
10. Do worms infect?

What's Your Score?

Answers to September Questions

1. Is vacuum packaging superior to atmospheric pressure for packing hard candies, etc.?

No. Airtight containers are best, in which the contained air is of low humidity and under atmospheric pressure. (See article, entitled "Water—and What It Does to Your Batch," in August issue of THE MANUFACTURING CONFECTIONER; also, "Without Benefit of Closure," in September issue.)

2. What harmless gas promises to revolutionize the summer transportation of package goods?

Solidified carbon dioxide. (An article on the possibilities of this new refrigerant is now in preparation.)

3. Why is it necessary to take special precautions with scrap containing foiled pieces?

Foils often contain harmful ingredients not intended for human consumption. This is particularly true of the colored foils which may contain such potent toxins as fuchsin and arsenic, which are dangerous to health in even minute quantities.

4. Which makes the strongest wrap, waxed glassine or ordinary waxed paper?

Weight for weight, waxed glassine is stronger. Although waxed glassine is higher in price by the

pound, its greater strength permits a lighter stock to be used and thus offsets the higher cost.

5. Which is heavier, a pound of puffed rice or a pound of pignolias?

Neither. They weigh the same. Go back to the kindergarten.

6. How can you determine whether a ribbon has been "loaded"? What is meant by loading, anyway?

Burn a small piece of the ribbon. If it burns up completely, it is safe to assume that it has not been loaded. If the charred remains retain their structural form, it is an indication that the ribbon has been loaded with tin.

"Loading" means treating ribbons with a solution of tin to add weight and bulk to the finished ribbon, but with a resulting impairment of its strength.

7. When is the best time in the year to buy paper boxes?

Whenever the boxmakers' business is slack—usually in the middle of summer.

8. What is meant by "chip," "news," "newsined," and "booklined" board?

"Chip" is board made from waste papers, boards, cuttings, boxes, sweepings from cutting rooms, and what have you.

"Newsboard" is made from

waste composed almost entirely of newspapers, resulting in a board much more uniform in color and with a smoother and better finish than chipboard.

"Newsined" means either a chip or newsboard lined with plain newspaper.

"Booklined" means board lined with a bleached white book paper.

9. What simple tests make it possible to distinguish between gelatine papers and the cellulose papers, such as "cellophane" and "fenestra"?

A small strip of gelatine paper placed in the palm of the hand readily curls up from the heat of the palm. Cellulose papers are not so susceptible to heat. The "curling fish" novelty of twenty years ago was an application of this. An even better test is to burn a small piece of the paper. If it gives off an odor of burning animal matter, it is a gelatine paper; the odor of burning paper indicates a cellulose paper.

10. What is considered a reasonable proportion of package expense for package chocolates?

About 10 per cent of the retail selling price on wholesale lines. See editorial, "A No-Limit Game," in the September issue of THE MANUFACTURING CONFECTIONER.

THE MANUFACTURING CONFECTIONER

Fault Finding for Profit

(Continued from page 27)

system express astonishment at the great number of defects which a trained observer manages to find in their supposedly 100 per cent products. For a time the complaints of the inspector are registered daily. A month goes by and the complaints are reduced to one or two a week, and finally the inspector has great difficulty in finding anything at all to criticize.

What are the common defects? Overflavored centers, and some

with no flavor at all—not just "weak," but a. w. o. l. The wrong flavor or a "potpourri" of flavors, where the candymaker started to put in the wrong one, discovered his mistake, and tried to cover it up with the right one. Centers into whose batches an ungodly amount of salt or of some foreign substance has been accidentally dumped. "Brickbats"—centers that refuse to soften gracefully with age.

A hapless specimen indeed is

the miscolored candy. Innocent though it seems, we must not forget that each color presents to the customer a definite flavor association. If the color is green and the flavor raspberry, he is apt to go into coma trying to find out why the "lime drop" tastes so horrible.

No, the candy manufacturer who wishes his sons to inherit the business cannot afford to take the quality of his finished product for granted.

PACKED GOODS EXAMINED

Date _____

CODE NO.	NAME OF PACKAGE	CODE DATE MADE	WRAPPER	BOX	RIBBON	FINDINGS LINERS, CUPS ETC.	CONDITION OF COATING	ACTUAL NET* WEIGHT	REMARKS

* GROSS LESS AVERAGE TARE.

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BRANCH OFFICES IN
PRINCIPAL CITIES

Can We Prevent Bursting Fermentation in Chocolate Cream Goods?

(Continued from page 39)

100 pounds of fondant. It is probable that this proportion may be reduced somewhat in plain fondant and still allow a sufficient margin of safety.

The action of invertase increases the proportion of syrup to microscopic sugar crystals and softens the cream. This effect is usually desired. If, however, the proportion of invertase used to prevent fermentation is found in any case to render the cream too soft, this may be corrected by increasing the stiffness of the cream when prepared. This is accomplished by increasing the boiling temperature to which the syrup used for making the fondant is concentrated.

Summary

Bursting fermentation of chocolate-coated cream confectionery, which causes a large financial loss each year and which is due to the action of highly sugar-tolerant yeasts, may be prevented by adding a suitable proportion of the enzyme invertase to the cream before the cream centers are molded. The invertase, by inverting a portion of the sucrose (cane or beet sugar) present and thereby increasing total sugar solubility, causes such an increase in the density of the syrup portion of the cream as to render it resistant to fermentation. The critical solids content is about 79 per cent. Creams containing a syrup portion

with a higher solids content were practically free from fermentation.

Creams containing imbedded fruit present a special case, owing to decrease in density of the syrup of the cream as a result of diffusion of fruit juice. Preliminary heating of the fruit at boiling temperature for periods which did not cause injury to flavor and texture retarded, but did not prevent, fermentation. A combination of preliminary heating and the use of a liberal proportion of invertase satisfactorily prevents fermentation in confectionery of this type.

New York Cocoa Exchange Elects Members

At a meeting of the Board of Managers held the tenth of October, the following were elected members of the New York Cocoa Exchange, Inc.:

Francis Stevenson of F. Stevenson & Co., Ltd., London, England.

John E. Lee of George C. Lee & Co., 96 Wall Street, New York City.

John Smidt of Hamburg, Germany.

W. J. Wessels, of Wessels, Kulenkampff & Co., 113 Pearl street, New York City.

John W. Parkinson of Marcone & Co., Inc., 98 Front street, New York City.

John A. Bachman of Bachman Chocolate Mfg. Co., Mount Joy, Pa.



KNOW

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